# Biological Assessment
## Midnite Mine – Revision 2

**Midnite Mine**
**Spokane Tribe of Indians Reservation**
**Stevens County, WA**
**Revision 2, September 2014**

**Prepared For:**
U.S. Environmental Protection Agency

**Prepared On Behalf of:**
Newmont USA, Limited and
Dawn Mining Company

**Prepared By:**
Worthington Miller Environmental, LLC
201 Linden Street, Suite 301
Fort Collins, Colorado 80525

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# 1.0 INTRODUCTION

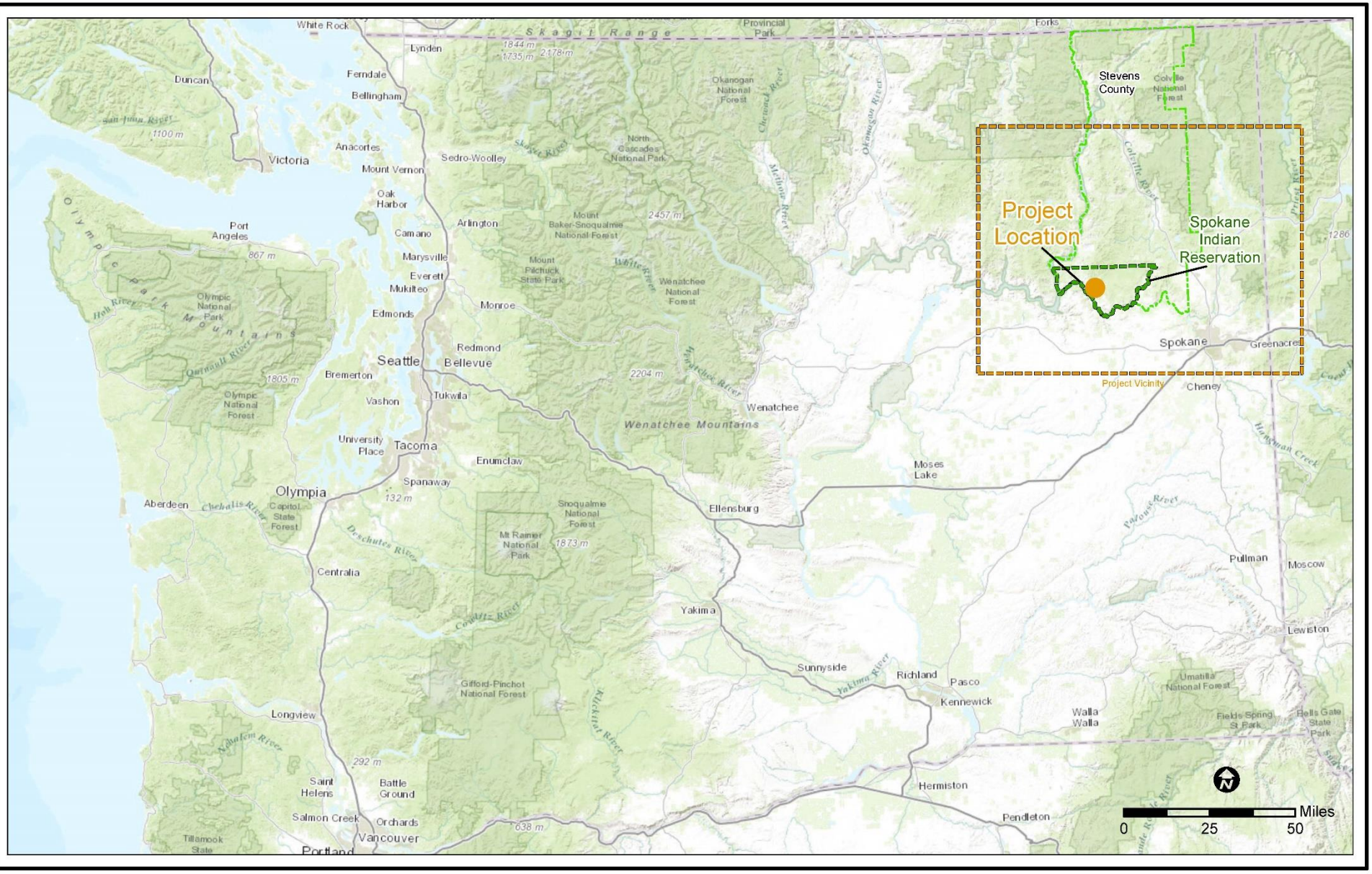
## 1.1 Project Background

This Biological Assessment (BA), Revision 2 evaluates the potential for the Midnite Mine Superfund Remedial Action Project to adversely affect listed species or designated or proposed critical habitat, in accordance with the 1973 Endangered Species Act (ESA). This revised submittal addresses the applicable 60 and 90 percent design comments from EPA.

The Midnite Mine Superfund Site (Site) is located on the Spokane Indian Reservation in Eastern Washington State (Figures 1 and 2). The Project Action Area is located in sections 1, 11, 12, 13, 14, 23, 24, 26, 27, 33, and 34, of Township 28 North and Range 37 East and sections 7 and 18 of Township 28 North and Range 38 East, Stevens County, Washington.

The former open pit uranium mine was in operation between 1955 and 1981. The current Site includes two large open pits, backfilled pits, a number of waste rock piles, ore/protore stockpiles, seep collection and pump back facilities, and water treatment plant (WTP). The Midnite Mine ceased operation in September of 1981 and from that time water has collected in the two open pits on the site. Contaminated water is seeping below the waste rock and ore piles and is currently being captured and treated at the WTP and discharged into Blue Creek. Blue Creek is a tributary to the Spokane River are of Lake Roosevelt, which is also a designated National Recreation Area. There is contaminated sediment deposited in the drainages below the mine and along the former mine haul roads. The key contaminants of concern (COC) for the protection of human health at the mine are radioactive isotopes of uranium (U-234, U-238) and their decay products, such as radium-226, radon gas (radon-222), lead 210, and others (EPA, 2006). Manganese is a COC for both human and ecological health and a number of other metals are COCs for ecological health. The Remedial Action (RA) involves the clean-up of contaminated mine waste and groundwater associated with this former mine (U.S. EPA Docket No. CERCLA-10-2009-0026).

Dawn Mining Company, LLC (DMC) and Newmont USA (Newmont) are taking this action as required by the January 7, 2012 Consent Decree in accordance with the Midnite Mine Superfund Site Record of Decision (ROD, [EPA, 2006]).

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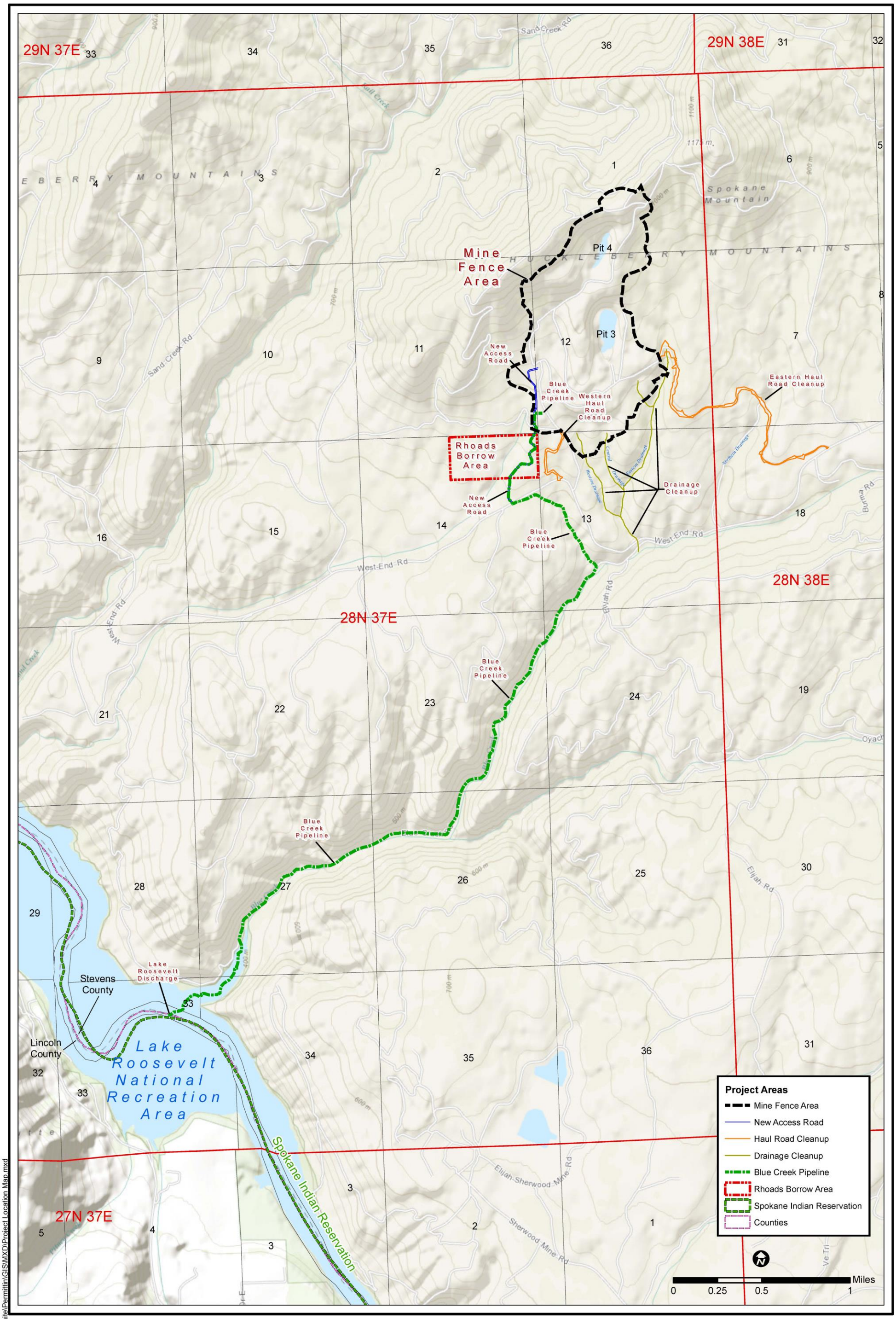
WORTHINGTON MILLER ENVIRONMENTAL, LLC.

# Figure 1
# Midnite Mine Project Vicinity

| | |
|---|---|
| Date: | July 2014 |
| Project: | Midnite Mine |
| File: | Project Vicinity.MXD |




Z:\Project Files\Midnite\Permitting\GIS\MXD\Project Location Map.mxd

WORTHINGTON MILLER ENVIRONMENTAL, LLC.

Figure 2
Midnite Mine Project Areas

| | |
|---|---|
| Date: | September 2014 |
| Project: | Midnite Mine |
| File: | MMComponents.MXD |

## 1.2 Biological Assessment Objectives

This BA was prepared in accordance with the legal requirements of Section 7 of the ESA to support the EPA with Section 7 consultation with USFWS.

The objectives of this BA are to:

- Characterize baseline conditions of existing habitat;
- Identify federally listed threatened and endangered species that have a potential to occur within the Action Area or be affected by the RA;
- Identify and address potential project impacts to listed species;
- Describe best management practices (BMPs) that will be used to avoid, minimize, or mitigate adverse effects.

## 1.3 Threatened and Endangered Species Considered

The U.S. Fish and Wildlife Service provided a list of Threatened and Endangered species that may be present in Stevens County, Washington, which identified the following species.

- Bull trout (*Salvelinus confluentus*) — Threatened
- Canada lynx (*Lynx canadensis*) — Threatened
- Grizzly bear (*Ursus arctos horribilis*) — Threatened
- Ute ladies'-tresses (*Spiranthes diluvialis*) — Threatened

Those species are further evaluated in this Biological Assessment. A summary of the listed species and their probability to occur within the project action area are provided in Table 1.

## Table 1. Summary of Federally Listed Species for Stevens County

| Species | Federal Status | Habitat Requirements | Likelihood of Occurrence | Critical Habitat |
|---|---|---|---|---|
| Bull trout (*Salvelinus confluentus*) | Threatened | Streams, lakes, and ocean with coldest water, cleanest substrate, complex (e.g., riffles, deep pools, undercut banks and large logs, and connected habitats with connection to headwaters for spawning. | Low. No suitable spawning habitat occurs in Lake Roosevelt. | No |
| Canada lynx (*Lynx canadensis*) | Threatened | High elevation coniferous or mixed forest adjacent to tundra with abundant prey | No suitable habitat is present in the Project Action Area. | No |
| Grizzly bear (*Ursus arctos horribilis*) | Threatened | Large contiguous tract of undisturbed land across a wide variety of habitats with concentrated food sources such as salmon runs and calving grounds. | No suitable habitat is present in the Project Action Area. | No |
| Ute ladies'-tresses (*Spiranthes diluvialis*) | Threatened | Broad low elevation inter-montane valley with sub-irrigated calcareous wetlands wet meadows | No suitable habitat is present in the Project Action Area. | No |

Applicable resource agencies were contacted to determine if there were any records of Threatened or Endangered species occurring in the project action vicinity. Agencies contacted included:

- Spokane Tribe Natural Resources Department
- Washington Department of Fish and Wildlife, Priorities Habitats and Species
- Washington Natural Heritage Program
- US Fish and Wildlife Service
- National Oceanic and Atmospheric Association, National Marine Fisheries Service, Habitat Program

The U.S. Fish and Wildlife Service (USFWS) was the only agency that had any records of listed species in the project action vicinity. A small number of bull trout in Lake Roosevelt are recorded annually (Per. Comm. Ames, 2013; Campbell, 2014). The National Marine Fisheries Service regulates anadromous fish and indicated that no anadromous fish occur upstream of the Chief Joseph Dam (Per. Comm. Yeager, 2013). All other agencies indicated that they do not have any records of listed species in the vicinity of the project action area. A log of communications with agencies is provided in Appendix A. Of the four species listed by USFWS in Stevens County, Washington, only bull trout has the potential to occur within the Action Area. Brief discussions of each of the species are discussed in the Species Account Section.

## 1.4 Previous Related Consultations

There have not been any previous related consultations with between U.S. Environmental Protection Agency (EPA) and the U.S. Fish and Wildlife Service (USFWS) on the Midnite Mine Remediation Project.

# 2.0 Baseline Site Conditions

## 2.1 Site Characteristics

### 2.1.1 Site Topography

Midnite Mine is located on approximately 350 acres in a mountainous area on the southeast side of the Spokane Mountain peak (elevation 3,870 ft above mean sea level (amsl)). The relatively steep site has approximately 2,500 feet of relief. The Site occurs within a sub-watershed within the Blue Creek Watershed. The sub-watershed ranges in elevation from 3,870 ft amsl at the ridge top to approximately 2,100 ft where the Central Drainage flows into Blue Creek. From the confluence with the Central Drainage, Blue Creek flows 3.5 miles, dropping over 600 ft in elevation, to Lake Roosevelt. Lake Roosevelt was formed by the construction of the Grand Coulee Dam on the Columbia River that has impounded this portion of the Spokane River.

### 2.1.2 Existing Structures

There are several structures within the Mine Fence Area which include the WTP and associated facility, several trailers, and decontamination building, and remnants of historical "mancamp" buildings. There are also a number of pipelines and culverts found throughout the site. All of these structures will be demolished as part of the RA.

### 2.1.3 Geologic Setting

Midnite Mine and the surrounding area are dominated by granitic quartz monzonite that intrudes the Togo Formation, a metamorphosed sedimentary rock. The Togo Formation contains the primary mineralized uranium at Midnite Mine. Most of the overlying sedimentary rock has been eroded away leaving a roof pendant of the Togo Formation comprised of phyllite schist and calc-silicate rocks, including marble, quartzite, and hornfels. Surface soils on top of the bedrock range in thickness between 0 and 20 feet consisting primarily of Hartill, Dragoon, and Raisio-rock outcrop soil complexes.

### 2.1.4 Hydrogeological Setting

The Mined Area drains into a number of small seasonal and intermittent streams (Western, Central, and Eastern Drainage) that flow into Blue Creek and ultimately into the Spokane Arm of Lake Roosevelt. There is a small area in the southwest side of the Mined Area that is within the Whitetail

Creek watershed, which also ultimately flows into Lake Roosevelt. Lake levels in Lake Roosevelt fluctuate based on Bureau of Reclamation management. Natural flows in the Western, Central, and Eastern Drainages are minimal throughout the year and supplemented by the discharge of treated effluent, up to 500 gallons per minute, from the WTP into the Eastern Drainage. The WTP operates April through November. Blue Creek flows perennially in most years, with low flow in late summer. Daily flows in Blue Creek upstream of the confluence with the Central Drainage ranged from 0.04 to 60 cubic feet per second (cfs) between 1984 and 2002 (USGS).

Lake Roosevelt is managed by the Bureau of Reclamation and is drawn down seasonally for hydroelectric power, flood control, irrigation, fish passage, and other downstream uses. In 2012, water levels in Lake Roosevelt fluctuated between 1,290 ft amsl and 1,227 ft amsl, with low water typically occurring in spring in preparation for spring runoff and then allowed to refill to normal operating levels by late June.

### 2.1.5 Climate/Seasons

The climate can be characterized by warm dry summer and wet and cold winters. The mean temperature in the area is approximately 47° F with monthly average temperatures ranging from 29.2° F in January to 71.0° F in August. Annual precipitation is approximately 18.5 inches and monthly average precipitation ranges from 0.3 inches in August to 2.5 inches in December. Average seasonal snowfall is 47 inches.

### 2.1.6 Ecological Setting

Most of the Mined Area is comprised of disturbed upland, mostly exposed ground and rock waste piles with little to no vegetation. The surrounding area is characterized as forested, grassland, open, and steep sub-habitats. The forested areas are comprised mainly of ponderosa pine (*Pinus ponderosa*) forest and mixed ponderosa pine/Douglas fir (*Pseudotsuga menziesii*) forest. The Western, Central, and Eastern Drainages and areas along Blue Creek contain scrub/shrub wetlands and riparian habitat comprised of a mix of alders (*Alnus* spp.), redosier dogwood (*Comus stolonifera*), Douglas hawthorne (*Crataegus douglasii*), redtop (*Agrostis gigantea*), and Rocky Mountain maple (*Acer glabrum*) and other species. Areas along the lake shoreline are relatively barren due to the fluctuating water levels.

## 3.0 Proposed Action Description

The Project Action Area footprint is approximately 603 acres and consists of the following areas:

- Mine Fence Areas (includes the Mined Area)
- Rhoads Borrow Area
- Blue Creek Pipeline and Access Road (Outside Fence and Borrow Area)
- Haul Road Clean up (outside fence)
- Drainage Clean up (outside fence)

The RA primarily involves the consolidation and disposal of contaminated material in the Waste Containment Area that will be hydraulically isolated from surface and ground water. The groundwater will be pumped and treated at the WTP and the treated effluent will be discharged into Lake Roosevelt. Work associated with this project action will include the following:

**On-Site Areas**

**Mine Fence Areas** (553 acres)

- Sediment and stormwater control installation
- Site preparation and clearing
- Decontamination area construction
- Construction support facilities area preparation development
- Drain material processing and Area 5 stockpiling
- Hillside waste rock pile processing for Pit 4 drain rock
- Mine waste excavation
- Pit 4 backfilling
- South Pond construction
- Water treatment plant and associated ponds construction
- Water treatment plant effluent pipeline and diffuser construction (Blue Creek pipeline)
- Alluvial groundwater controls installation
- Pit 3 backfilling
- Hillside waste rock processing for Pit 3 drain rock
- Area 5 re-grading
- Backfilled Pit Area remediation
- Existing WTP Building demolition
- West Pond construction
- Pollution Control Pond removal
- South Pond removal
- South Waste Rock Pile remediation
- Central Drainage sediment remediation

- West Pond removal
- Permanent influent pipelines, site maintenance roads, and fencing construction
- Waste surface contouring
- Waste Cap cover construction
- Cap and other mined area reclamation
- Pit water, seeps, and groundwater treatment
- Stormwater and sediment control installation/maintenance
- Site reclamation/revegetation
- Clean runoff diversion away from Waste Containment Area
- Long-term monitoring

**Blue Creek Pipeline** (4.6 acres)

- Sediment and stormwater control installation
- Impeding tree removal
- Wellpinit – Westend Road traffic control
- Effluent pipeline installation in existing Blue Creek Road
- Effluent pipeline installation in dry portion of Lake Roosevelt
- Outfall diffuser Installation
- Effluent pipeline submersion in inundated portion of Lake Roosevelt
- Site reclamation/revegetation
- Long-term monitoring

**Mine Road Remediation** (Eastern and Western Haul Road Clean-up) (17 acres)

- Sediment and stormwater control installation
- Road base and sediment excavation
- Site reclamation/revegetation

**Drainage Clean-up** (Western, Central, and Eastern Drainages) (>3 acres)

- Sediment and stormwater control installation
- Sediment excavation
- Groundwater collection trench installation
- Flood attenuation berm installation
- Sediment and stormwater control installation
- Site reclamation/revegetation

**New Access Road** (1 acre)

- New access road grading and paving

**Off-Site Areas**

**Borrow Area**

**Rhoads Borrow Area** (67 acres)

- Sediment and stormwater control installation
- Site access development
- Haul road construction
- Borrow area development

- Timber harvest
- Slash and stump removal
- Topsoil salvage
- Borrow material extraction
- Site re-contour
- Topsoil placement
- Site revegetation

**Lake Roosevelt**

- As applied to discharge of water treatment system effluent only

Other project components are included as part of remediation, but are inconsequential to this analysis.

With the exception of the WTP effluent discharge into Lake Roosevelt and the Rhoads Borrow Area, all other components of the project action are considered on-site and are exempt from permitting requirements under CERCLA (OSWER Directive 9355.7-03). The on-site areas that are exempt from permitting requirements, include the Mine Fence Area (includes Mined Area), New Access Road, Haul Road Cleanup (Eastern and Western Haul Roads), Drainage clean up, and Blue Creek Pipeline. The Rhoads borrow area and the WTP effluent discharge into Lake Roosevelt (waters of the U.S.) are off-site and applicable permit such as the National Pollution Discharge Elimination System Permit (NPDES). As such, permits are required for actions in these off-site areas. See discussion of the pending NPDES permit update for treated mine water.

Since bull trout is the only species of concern most of the discussion within this BA will primarily focus on the portion of the RA in and adjacent to Lake Roosevelt. Construction on the Blue Creek Pipeline is expected to commence in May of 2016. However, the design of the pipeline has been put on hold until the NPDES permitting requirements can be resolved.

#### *3.1.1.1 Blue Creek Pipeline*

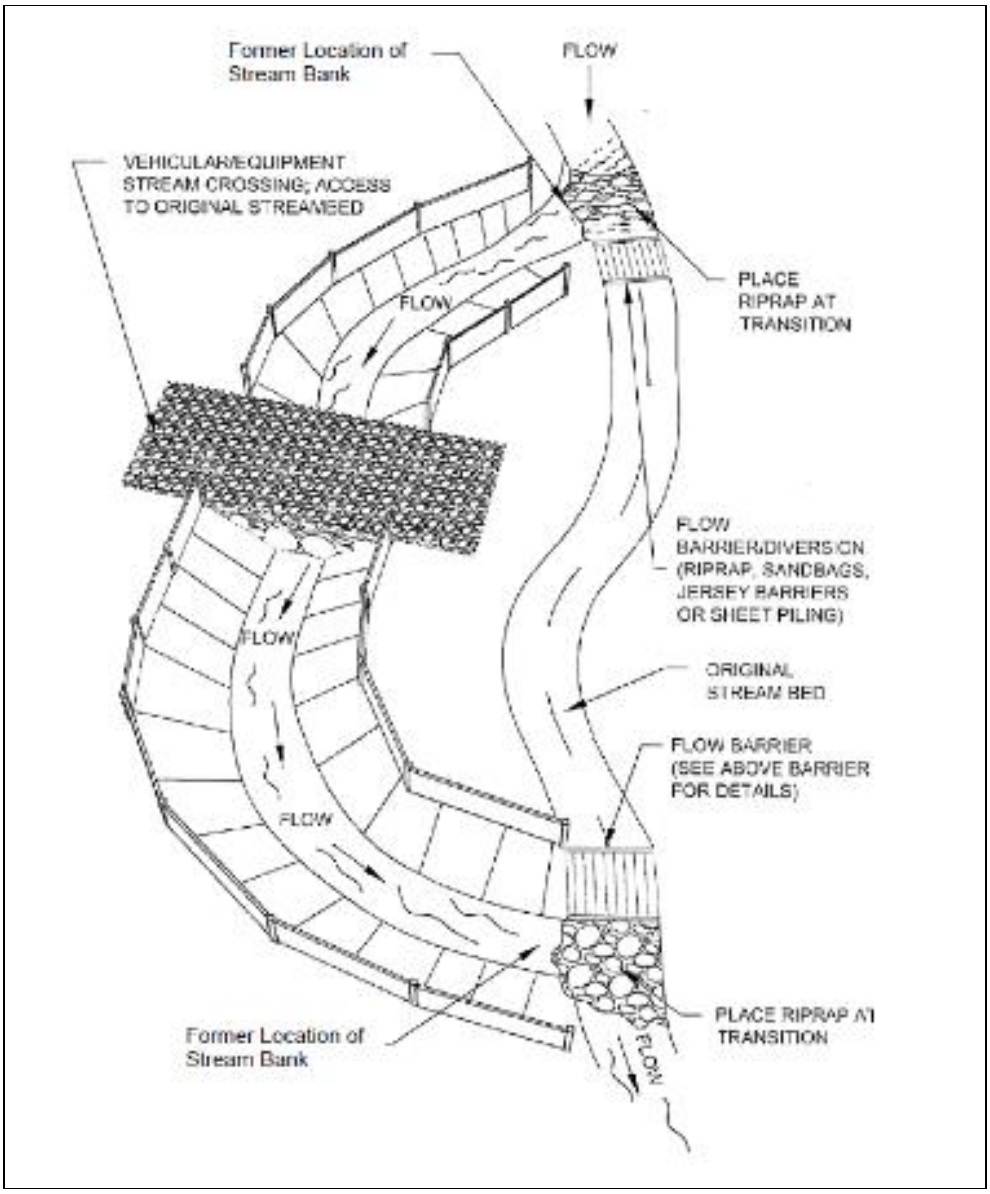
The Blue Creek Pipeline will be constructed below Lake Roosevelt's high water line (1,290 ft amsl) when the reservoir level is drawn down in the Spring of 2016. The pipeline will be routed from the end of Blue Creek Road through a short section of upland grassland and scrub and into the Lake Roosevelt lake bottom. The pipeline will be approximately 3,600 feet, in a 40 ft wide work area, within Lake Roosevelt National Recreation Area (LARO NRA), from elevation 1,310 ft to the historic Spokane River channel into Lake Roosevelt. In order to avoid a landslide area and other unstable

slopes on the south side of Blue Creek, the pipeline will cross to the north side of the creek. The pipeline will be constructed across Blue Creek during high spring runoff and will be constructed in a way that minimizes impacts to fish that may inhabit the stream.

Construction across the creek will use a temporary diversion method that minimizes impacts to the overall stream channel by temporarily diverting the flows to a channel or culvert while the pipeline is constructed across the stream. See Figure 4 for an illustration of the method (Urban Drainage and Flood Control District, 2012). By creating a temporary diversion, the amount of time of the actual construction across the creek can be minimized to days instead of weeks, thereby minimizing disruption to migrating and spawning fish. Once construction across the stream channel is completed, stream flows will be returned back to the original channel and the temporary channel will be removed.

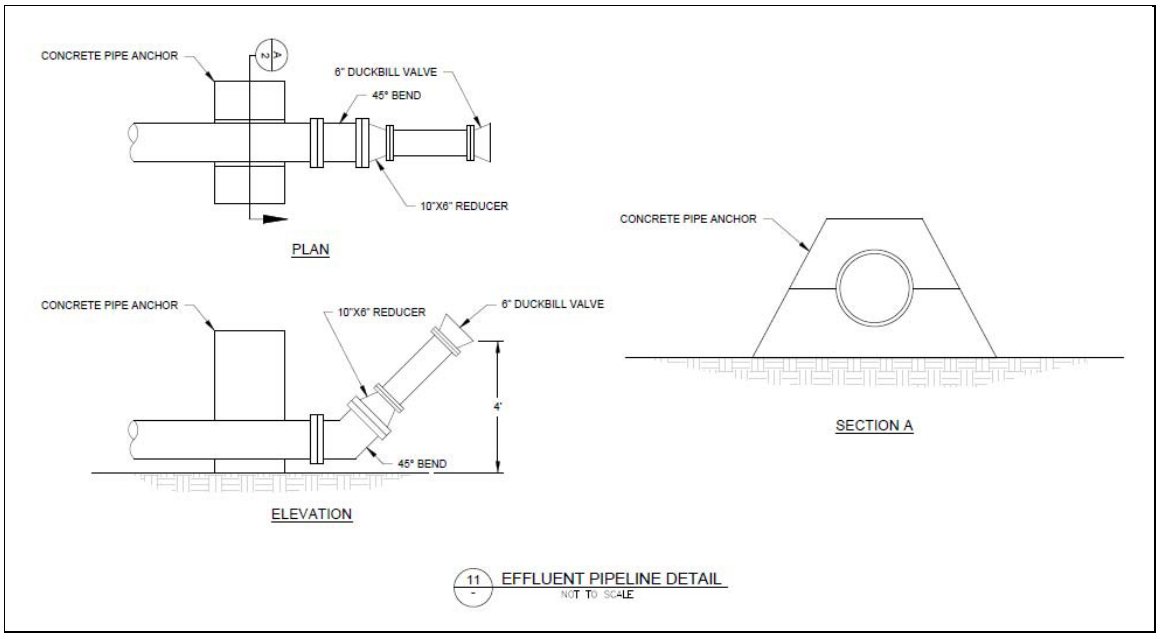
The remainder of the pipeline will be constructed on the dry lakebed during low lake water levels using an eight-inch High Density Polyethylene (HDPE) fuse welded pipe with a six inch single port diffuser and elastomeric duckbill valve place at the end (Figure 5). The pipeline would be constructed in a 40-foot wide work area and buried two to four feet below the lake floor, down to elevation 1,260 ft. In inundated areas, the pipeline would be assembled on shore, floated onto the lake, and submerged with concrete anchors until an extreme low water conditions would allow the remainder of the pipeline to be buried. Only clean fill material would be used as trench backfill. Following each phase of construction, the lake bottom will be re-contoured back to pre-construction condition. No revegetation will be required below the high water line and only upland vegetation occurs where the pipeline enters the lake. BMPs such as silt fence and straw bales will be used to minimize any turbidity from stormwater runoff from reaching the stream. The soil/sediment at the Blue Creek delta is relatively coarse sand and turbidity is expected to be minimal.

Additional detail will be provided once the design is developed further in the 100 percent design. However, the pipeline design has been delayed until the NPDES permitting requirements are resolved.




**Urban Drainage and Flood Control District, Urban Storm Drainage Criteria Manual Volume 3, June 2012.*

## Figure 3. Example Diagram of Temporary Stream Diversion




## Figure 4. Pipeline Diffuser

#### *3.1.1.2 Effluent Discharge.*

The mine water is being treated at the existing Midnite Mine water treatment plant (WTP) and then discharged into Blue Creek (a tributary to Lake Roosevelt) under NPDES permit No. WA- 002572-1. An application to modify the NPDES permit was submitted to the EPA on March 21, 2013 and additional information was submitted on July 2, August 28, September 27, October 18, November 1, and December 9, 2013. A copy of the NPDES permit application is provided in Appendix B.

Based upon the results of the investigations, the WTP effluent falls into one of four categories for each analyte, as summarized on Table 2. The effluent either 1) achieves the STI standard, 2) has concentrations that are lower than common laboratory detection methods and the standard is also lower than concentrations that are detectable, 3) will achieve the STI standard with a mixing zone, or 4) the effluent and receiving water are both over the STI standard. The WTP effluent achieves the majority of the standards in the STI surface water quality standards for each of the corresponding analytes. Four of the analytes have standards that are below the MDC, and have not been measured in the effluent above the minimal detectible concentrations (MDC). Thirteen of the analytes will meet the STI water quality standards at the end of a mixing zone within Lake Roosevelt.

Total aluminum, total arsenic, and total mercury concentrations do not meet the adopted STI surface water standard in either the WTP effluent or Lake Roosevelt. Statistical analyses determined that the concentrations of aluminum are not significantly different between the WTP effluent and Lake Roosevelt, and the concentrations of arsenic are significantly less in the WTP effluent than in Lake Roosevelt. The concentrations of mercury are uncertain due to several estimated, biased high data, but statistically are significantly different for the WTP effluent and Lake Roosevelt. The WTP effluent and Lake Roosevelt water achieve the current EPA approved STI surface water quality standard for mercury.

While neither the effluent nor Lake Roosevelt meet the adopted standards for these three analytes, the concentrations in Lake Roosevelt may represent natural conditions specific to water quality standards. Effluent from the pipeline will be consistent with the existing Blue Creek discharge and comply with the new NPDES permit requirements. On December 19, 2013 EPA took action on the Spokane Tribe's 2010 revised water quality standards, approving the standards under the Clean Water Act, with certain exceptions (EPA 2013). Further design of the WTP and discharge pipe have been postponed until EPA issues a draft NPDES permit and factsheet. EPA will follow the normal permitting process with regards to ESA consultation. The Spokane Tribe is responsible for certification that the permit meets tribal standards under the Clean Water Act, Section 401.

## Table 2. Effluent Categories by Analyte

| Analyte | Units | 2003 STI Water Quality Stds (EPA Certified) | 2010 STI Water Quality Stds | Washington State Surface Water Quality Stds | Effluent Category | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Effluent Meets Standard | Std. below detectable levels | Std achievable with mixing zone in LR | Effluent and LR greater than Std |
| Aluminum, tot (Al) | µg/L | 50 [d] | 50 [d] | - | | | | X (Eff < LR) |
| Aluminum, diss (Al) | ug/L | 87 | 87 | | | | X | |
| Antimony, tot (Sb) | µg/L | 13 | 5.76 | - | X | | | |
| Arsenic, diss (As) | µg/L | 150 [g] | 150 [g] | 190 | X | | | |
| Arsenic, tot (As) | µg/L | 0.0069 | 0.000951 | | | | | X (Eff < LR) |
| Barium, tot (Ba) | µg/L | 1,000 | 1,000 | - | X | | | |
| Beryllium, tot (Be) | µg/L | 4 [d] | 4 [d] | | X | | | |
| Cadmium, diss (Cd) | µg/L | 0.54 [a] | 0.54 [a] | 0.54 [a] | X | | | |
| Cadmium, tot (Cd) | µg/L | 5 [d] | 5 [d] | | X | | | |
| Chloride (Cl) | mg/L | 250 [d] | 250 [d] | 230 | X | | | |
| Chromium, diss (Cr) | µg/L | 36.5 [a,b] | 36.5 [a,b] | | X | | | |
| Chromium, tot (Cr) | µg/L | 100 [d] | 100 [d] | 102.3 [a,b] | X | | | |
| Copper, tot (Cu) | µg/L | 1,000 [d] | 12.1 | | X | | | |
| Copper, diss (Cu) | µg/L | 4.3 [a] | 4.3 [a] | 5.4 [a] - | X | | | |
| Fluoride (F) | mg/L | 2 [d] | 2 [d] | - | X | | | |
| Gross Alpha | pCi/L | 15 | 15 | - | | | X | |
| Gross Beta | pCi/L | 50 | 50 | - | X | | | |
| Iron, tot (Fe) | µg/L | 300 [d] | 300 [d] | - | X | | | |
| Lead 210 (Pb-210) | pCi/L | 0.01 | 0.01 | 0.8 [f] | | X | | |
| Lead 212 (Pb-212) | pCi/L | 2 | 2 | 160 [f] | | X | | |
| Lead, diss (Pb) (*) | µg/L | 0.97 [a] | 0.97 [a] | 0.97 [a] - | X | | | |
| Manganese, tot (Mn) | µg/L | 50 [d] | 50 [d] | - | | | X | |
| Mercury, tot (Hg) | µg/L | 0.01 | 0.0011 | 0.012 [c] | | | | X |
| Nickel, tot (Ni) | µg/L | 231 | 31.4 | | X | | | |
| Nickel, diss (Ni) | µg/L | 25.1 [a] | 25.1 [a] | 75.7 [a] | X | | | |
| Nitrate/Nitrite-N ($NO_2$+$NO_3$) | mg/L as N | 10 [d] | 10 [d] | - | X | | | |
| Nitrate-N ($NO_3$) | mg/L as N | 10 [d] | 10 [d] | - | X | | | |
| Nitrite-N ($NO_2$) | mg/L as N | 1 [d] | 1 [d] | - | X | | | |
| pH | s. u. | 6.5 – 8.5 [d] | 6.5 – 8.5 [d] | 6.5 – 8.5 | X | | | |
| Polonium-210 (Po-210)** | pCi/L | 0.04 | 0.04 | 3.2 [f] | X | | X | |
| Protactinium-234 (Pa-234)** | pCi/L | 30 | 30 | 2400 [f] | X | | | |
| Radium-226 (Ra-226)** | pCi/L | 0.06 | 0.06 | 4.8 [f] | | | X | |
| Radium-228 (Ra-228)** | pCi/L | 5 [e] | 5 [e] | 4.8 [f] | X | | | |
| Selenium, tot (Se) | µg/L | 5 [c] | 5 [c] | 5 [c] | X | | | |
| Silver, diss (Ag) | µg/L | 0.78 [a] | 0.78 [a] | 0.78 [a] | X | | | |
| Silver, tot (Ag) | µg/L | 100 [d] | 100 [d] | - | X | | | |
| Strontium 90 (Sr-90) | pCi/L | 8 [d] | 8 [d] | 40 [f] | X | | | |
| Sulfate ($SO_4$) | mg/L | 250 [d] | 250 [d] | - | | | X | |
| TDS Total Dissolved Solids (TDS) | mg/L | 500 [d] | 500 [d] | - | | | X | |
| Thallium, tot (Tl) | µg/L | 0.388 | 0.0445 | - | | | X | |
| Thorium-232 (Th-232)** | pCi/L | 0.03 | 0.03 | 2.4 [f] | | X | | |
| Thorium-234 (Th-234)** | pCi/L | 5 | 5 | 400 [f] | | X | | |
| Tritium (H-3) | pCi/L | 20,000 [d] | 20,000 [d] | 80,000 [f] | X | | | |
| Uranium 234 (U-234)** | pCi/L | 0.3 | 0.3 | 24 [f] | | | X | |
| Uranium 235 (U-235)** | pCi/L | 0.3 | 0.3 | 24 [f] | | | X | |
| Uranium 238 (U-238)** | pCi/L | 0.3 | 0.3 | 24 [f] | | | X | |
| Uranium (nat) | pCi/L | 0.3 | 0.3 | - | | | X | |
| Zinc, diss (Zn) | µg/L | 50.3 [a] | 50.3 [a] | 11 [a] | X | | | |
| Zinc, tot (Zn) | µg/L | 5,000 [d] | 5,000 [d] | | X | | | |

**Table Footnotes:**

*a. Hardness dependent value based on a hardness of 42 mg/L as $CaCO_3$.*

*b. Value is for trivalent chromium.*

*c. Based on total recoverable fraction of the metal.*

*d. Value is for Primary Contact Ceremonial and Spiritual Uses.*

*e. Ra 226 and Ra228 combined must be less than 5 pCi/L*

*f. Washington State Surface Water Quality Standards for radionuclides are calculated as 1/12.5 of the values listed in WAC 246-221-290*

*g. Refers to the inorganic form only*

*Notes on Categorizing:*

**lead in effluent qualified as baiased high (found in blank) in one sample, all others below detection with no qualifications due to data validation*

*** Radionuclide - value is in addition to receiving water which is assumed to be natural conditions*

# 4.0 Environmental Baseline and Species Accounts

## 4.1 Action Area

The Action area is "all areas that may be affected directly or indirectly by the proposed Federal action and not merely the immediate area involved in the action." The Action Area includes the Mine Fence Area (includes Mined Area), the Drainage Cleanup, the Eastern and Western Haul Routes, New Access Road, the Blue Creek Pipeline, and the WTP Effluent Discharge. In addition, the removal of the WTP discharge from the Eastern Drainage and the construction of the alluvial groundwater trenches will effectively dry up most of the wetlands in the Western, Central, and Eastern Drainages. The Drainage Cleanup and Eastern Haul Road Cleanup will consist of work in the wetlands and stream, between the Mined Area and Westend-Wellpinit Road. Attenuation berms will be constructed in the Drainage Cleanup area to help minimize flooding events during spring runoff and trap sediment. The Drainage Cleanup will occur in 2020 beginning in the Eastern Drainage and the Western and Central Drainages will be cleaned up in 2022. The construction of the Blue Creek Pipeline within the Lake Roosevelt will extend approximately 3,600 ft and will be constructed in a 40 ft wide work area on the dry lake bed. The construction of the pipeline will occur in 2016.

# 5.0 SPECIES ACCOUNTS

Habitat requirements and geographic range for each species and their likelihood for occurring within the action area are discussed below.

## 5.1 Bull Trout (*Salvelinus confluentus*)

Bull trout is a char of the salmonids family and were previously considered a Dolly Varden (*Salvelinus malma*) until reclassified in 1980. The U.S. Fish and Wildlife Service listed this species as Threatened in 1999.

Bull trout once ranged from northern California to the Yukon in Canada and east to the continental divide from Alberta down to northern Nevada (Haas and McPhail, 1991) including Washington, Oregon, Idaho, Montana, and Nevada (USFWS, 2010). This species once inhabited 60 percent of the Columbia River Basin, including the Spokane River, but reduced water quality and water impoundments have reduced their range to less than half of their historic range (USFWS, 2010).

This pre-glacial relic is found in relatively pristine cold clear water of high-mountain and coastal waters of the Pacific Northwest that provide clean gravel with deep pools and complex cover such as snags or cut banks. Bull trout inhabit cold water with temperatures below 55 °F, typically between 41 °F and -48 °F, and are rarely found in waters above 59 to 64 °F (USFWS, 2010). Bull trout also require oxygen levels of at least 6.5 mg/L (Chambers et al., 2000).

Most bull trout are largely migratory and primarily inhabit large rivers or lakes and return to small streams to spawn. However, some bull trout are residents; spending their entire life cycle in the same stream or water body. Bull trout are also anadromous and can migrate from one coastal stream to another via the ocean.

Juvenile bull trout (<3 years) are most often found in low velocity, shallow water with abundant cover and temperatures colder than most other juvenile salmonids will tolerate. Juveniles prefer relatively shallow water with most streams being less than 18 inches deep. Spawning is optimum at 12 to 24 inches in water depth.

Most juveniles remain in close proximity to the bottom under in-stream cover with slow velocities. Sexual maturity is reached in 4 to 7 years. Bull trout can grow to 20 pounds and live up to 12 years in lake conditions and up to 20 years in exceptional conditions.

Bull trout diet varies depending upon their age and life history strategy. Juvenile and migratory bull trout feed on terrestrial and aquatic insects, macro-zooplankton, amphipods, mysids, crayfish, and small fish (USFWS, 2014). Adult and migratory bull trout primarily feed on trout (*Salmo* spp.) and salmon (*Onchorynchus* spp.), whitefish (*Prosopium* spp.), yellow perch (*Perca flavescens*), and sculpin (*Cottus* spp.) (USFWS, 2014).

Significant decline to bull trout populations are primarily due to the degradation and fragmentation of their habitat including the placement of dams throughout their migratory corridors and reduced water quality. Other threats to bull trout include the introduction of non-native species such as brown, lake and brook trout. Increased water temperatures associated with climate change has also shrunk their suitable habitat.

The Northeast Washington Recovery Unit includes the main stem of the Columbia River and all tributaries above Chief Joseph Dam up to the Canadian border, Spokane River and tributaries to Post Falls Dam (USFWS, 2002). There is no designated Critical Habitat for bull trout present in the vicinity of the project action area. The nearest bull trout designated Critical Habitats occur downstream on the Columbia River at the Chief Joseph Dam, upstream at Coeur d'Alene Lake, and Pend Oreille River.

A number of fish surveys were conducted in Blue Creek and the Blue Creek inlet from 1985 to present (Scholz et. al., 1988; Crossley, 2000; Per. Comm. Flanagan, 2013) and no bull trout have been documented during that time. Blue Creek does provide habitat for other fish species such as redband rainbow trout (*Oncorhynchus mykiss gairdneri*), brown trout (*Salmo trutta*), sculpin, and longnose sucker (*Catostomus catostomus*).

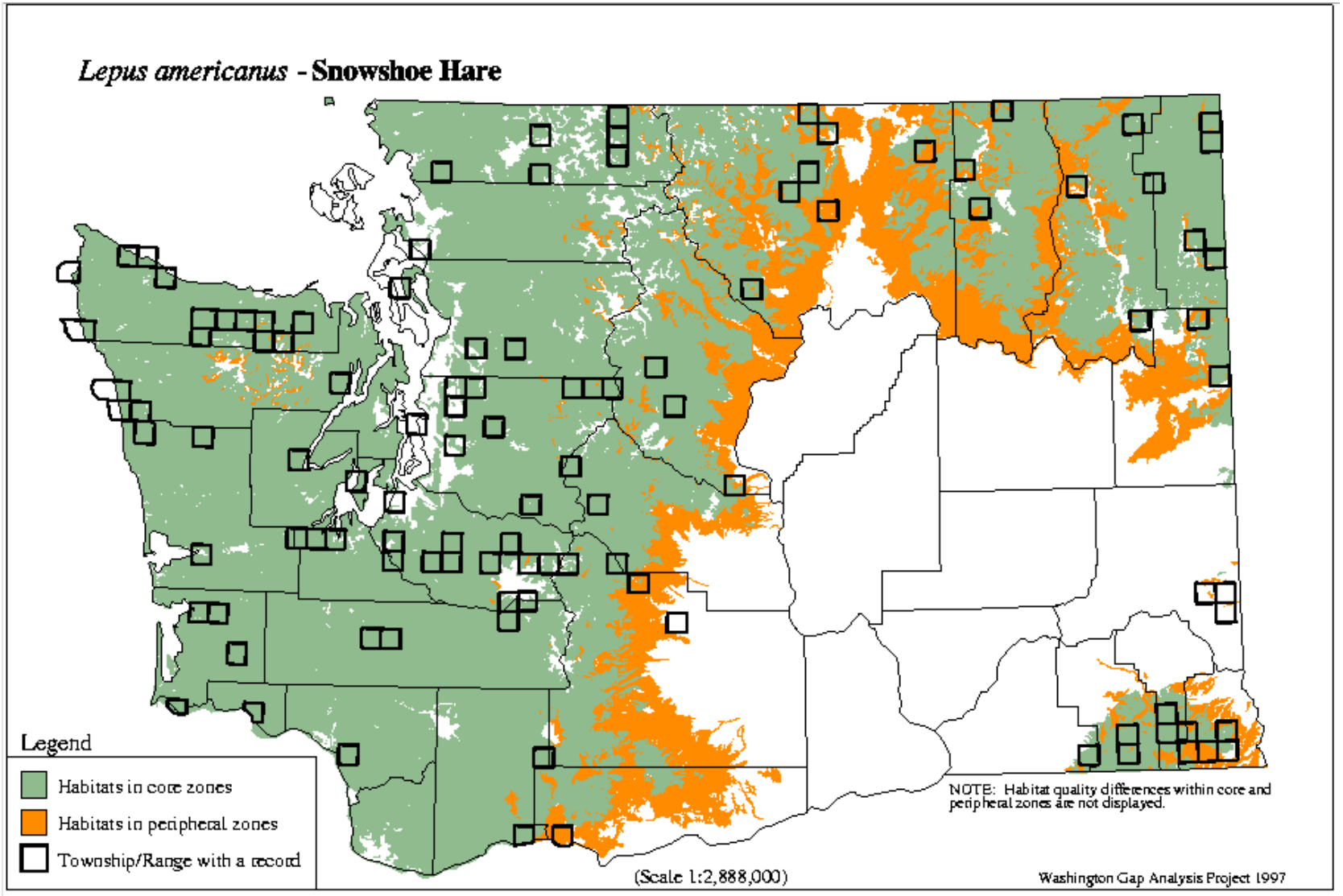
Lake Roosevelt, Blue Creek, and its tributaries do not contain the required habitat constituents of cold, clean, complex and connected habitat to support a spawning population of bull trout. There are no known spawning populations of bull trout in Lake Roosevelt. Isolated observations of bull trout in Lake Roosevelt are recorded annually. In 2012, about a dozen bull trout reported were likely washed down from Lake Coeur d'Alene, with most coming from the upper Columbia River (Per. Comm. Ames, 2013; Campbell, 2014).

## 5.2 Canada Lynx (*Lynx canadensis*)

Canada lynx are found throughout Alaska, Canada, the Rocky Mountains, northern Great Lakes region and northern New England. In Washington, Canada lynx are found in old growth, high

elevation, western boreal forests above 1,400 m (4,600 ft.) (Ruggeria et. al., 1999) concentrated in the Cascade and Selkirk Ranges (Nature Serve, 2013).

In the Selkirk Mountains, the boreal forest includes interior western cedar and hemlock. Lynx are highly dependent upon snowshoe hare, but they also prey upon red squirrels, small mammals, birds, and carrion. Snowshoe hares prefer areas with dense protective understories composed of edible shrubs and trees (Wolfe et. al., 1982). Preferred lynx hunting habitat consists of 20 to 30 year old pole-size stands of timber. Foraging habitat is considered a limiting factor for lynx (Fitzgerald, 1994). Denning sites require large downed woody debris such as hollow logs or root wads. The U.S. Geological Service maps land cover and models species habitat as part of the National GAP Analysis Program Maps. The GAP species model for snowshoe hare shows that the Action Area provides peripheral habitat (Figure 4); however, core habitat is higher up in elevation. There is a historical record of snowshoe hare occurring approximately 40 miles to the east of the Action Area. Although snowshoe hare habitat occurs in the Action Area, it is unlikely that Canada lynx occur on the site.

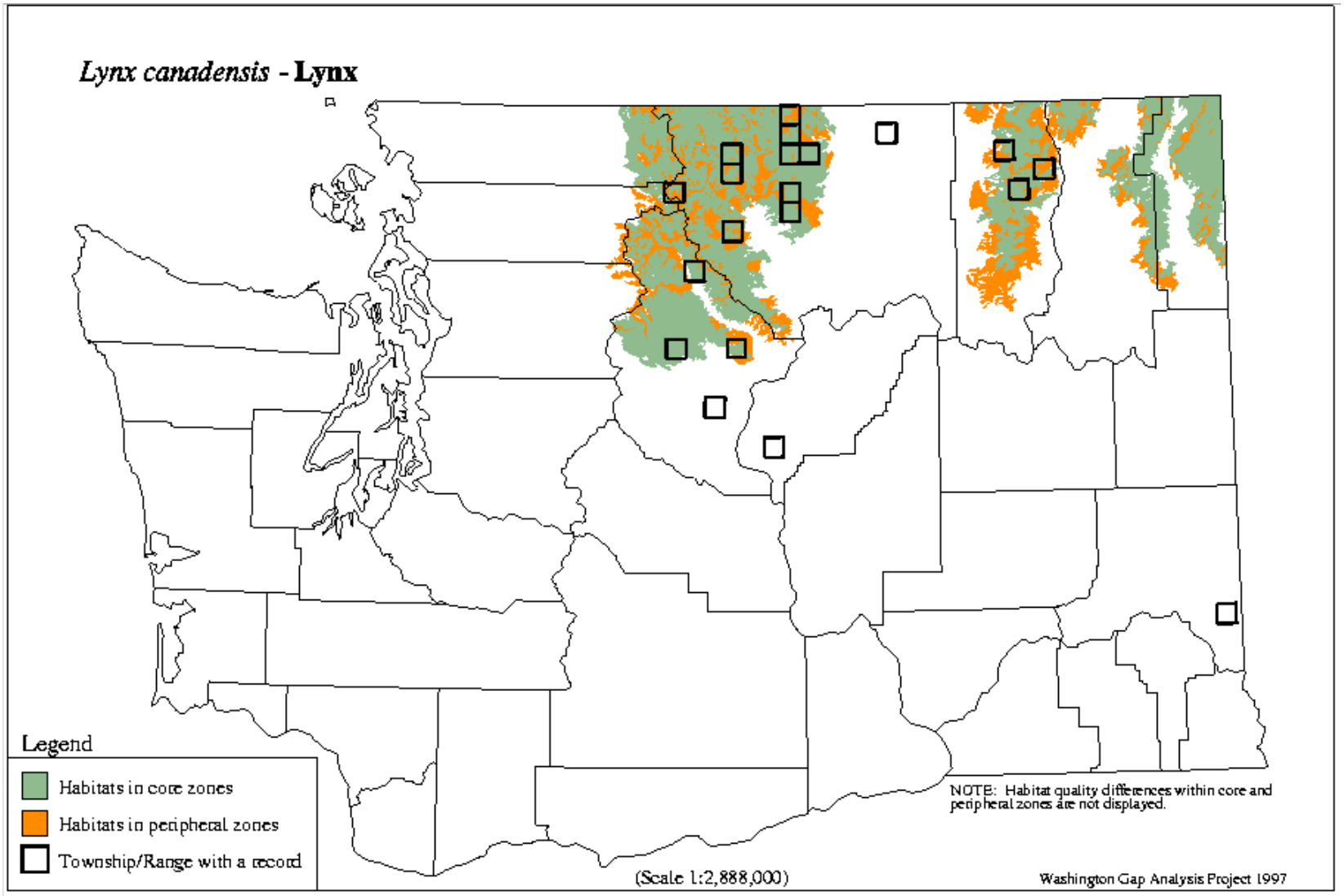



Source: Washington Department of Fish and Wildlife found at http://wdfw.wa.gov/conservation/gap/gapdata/mammals/gifs/leam.gif

## Figure 4. GAP Habitat Map for Snowshoe Hare in Washington

The GAP model also shows that there is no Canada lynx habitat occurring within the Spokane Tribe of Indians Reservation (Figure 5). The nearest historical record from the 1997 Washington GAP Analysis map shows three to the north in Ferry County in the Oregon City Ridge and Gold Mountain Ridge (Figure 5). The 2001 State of Washington Lynx Recovery Plan (Stinson, 2001) shows that the nearest recently occupied territories occur in recovery areas of North Sherman (233) and Calispel (218) in the Kettle and Selkirk Mountain Ranges, respectively. These areas are approximately 40 miles to the north and northeast respectively.

Lynx populations have declined in the United States due to human alteration of forests, fire suppression, past exploitation, expansion of competitor range (particularly bobcats and coyotes), and increasing levels of human access to lynx habitat.




Source: Washington Department of Fish and Wildlife found at http://wdfw.wa.gov/conservation/gap/gapdata/mammals/gifs/lyca.gif

## Figure 5. GAP Habitat Map for Canadian Lynx in Washington

There are no known occurrences of Canada lynx within the Spokane Indian Reservation. The site lacks the required habitat constituents to support a lynx population. Specifically, the site is not high enough in elevation and not contiguous with other suitable Canada lynx habitat.

## 5.3 Grizzly bear (*Ursus arctos horribilis*)

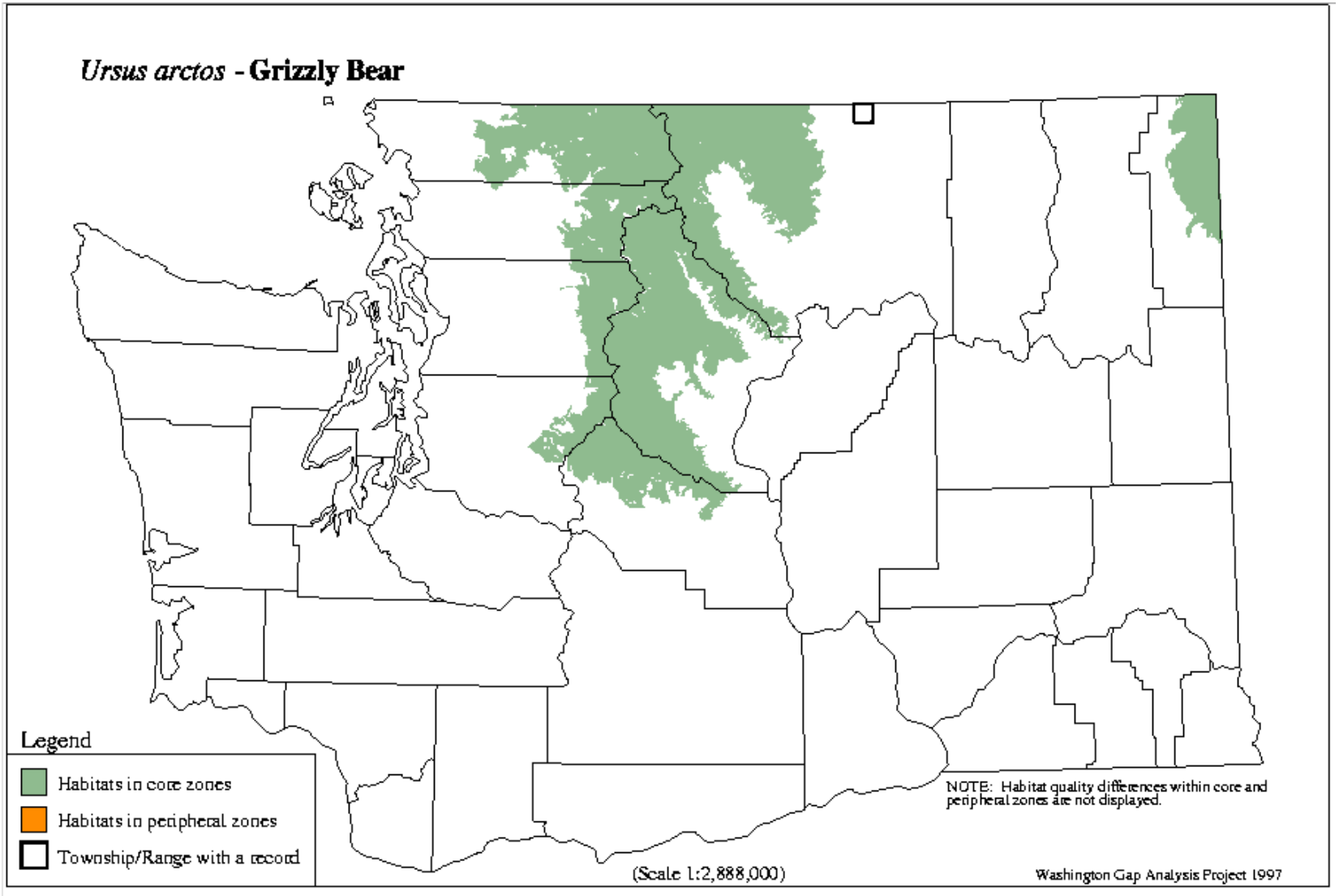
Grizzly bears once ranged throughout Western North America from Central Mexico to the Arctic Ocean (USFWS, 1993). Their range has been substantially reduced to less than 2 percent of their former range in the lower 48 states. Current range includes northeastern and northwestern Washington, northern and eastern Idaho, northwestern Wyoming, western Montana, British Columbia, Alberta, Northern Territories, and Yukon.

Most of the areas of their remaining populations include large contiguous tracts of relatively undisturbed land with high topographic relief and vegetation diversity (such as forest, shrublands, and grasslands), and low bear human conflict. These omnivores generally live in areas with concentrated food sources such as salmon or elk and caribou calving grounds. They are opportunistic feeders and will also feed on small mammals and garbage. In addition, grizzly bears supplement their diet with bulbs, tubers, berries, nuts, and fungi.

Grizzly bears are generally solitary animals with overlapping home ranges. They reach sexual maturity at around 5 years and have been known to live as long as 40 years. Grizzly bears' home ranges vary greatly depending upon food availability and habitat quality. Female bears average 150 square miles while male bears range from 110 to 540, with 309 square miles being average (USFWS, 2011). Grizzly bears in the Glacier National Park Area have been reported to have a population density of one bear per 8 square miles.

Threats to grizzly bears are primarily the loss of contiguous high quality habitat, genetic isolation and human bear interactions associated with livestock protection, threats to human safety, hunting, illegal kills, and nuisance behavior. Habitat fragmentation by highways and disturbance by motorized vehicles also limits their range.

There is no designated Critical Habitat for grizzly bear in Washington. The nearest population of grizzly bear is in the Selkirk Recovery Area which straddles the U.S. and Canadian border at the Washington and Idaho border. This area includes the southern-most portion of the Selkirk Mountains bounded by the Kootenai Lake and River on the north and east, the Salmon and Pend Oreille Rivers on the west and south and the Kootenai River Valley to the east.



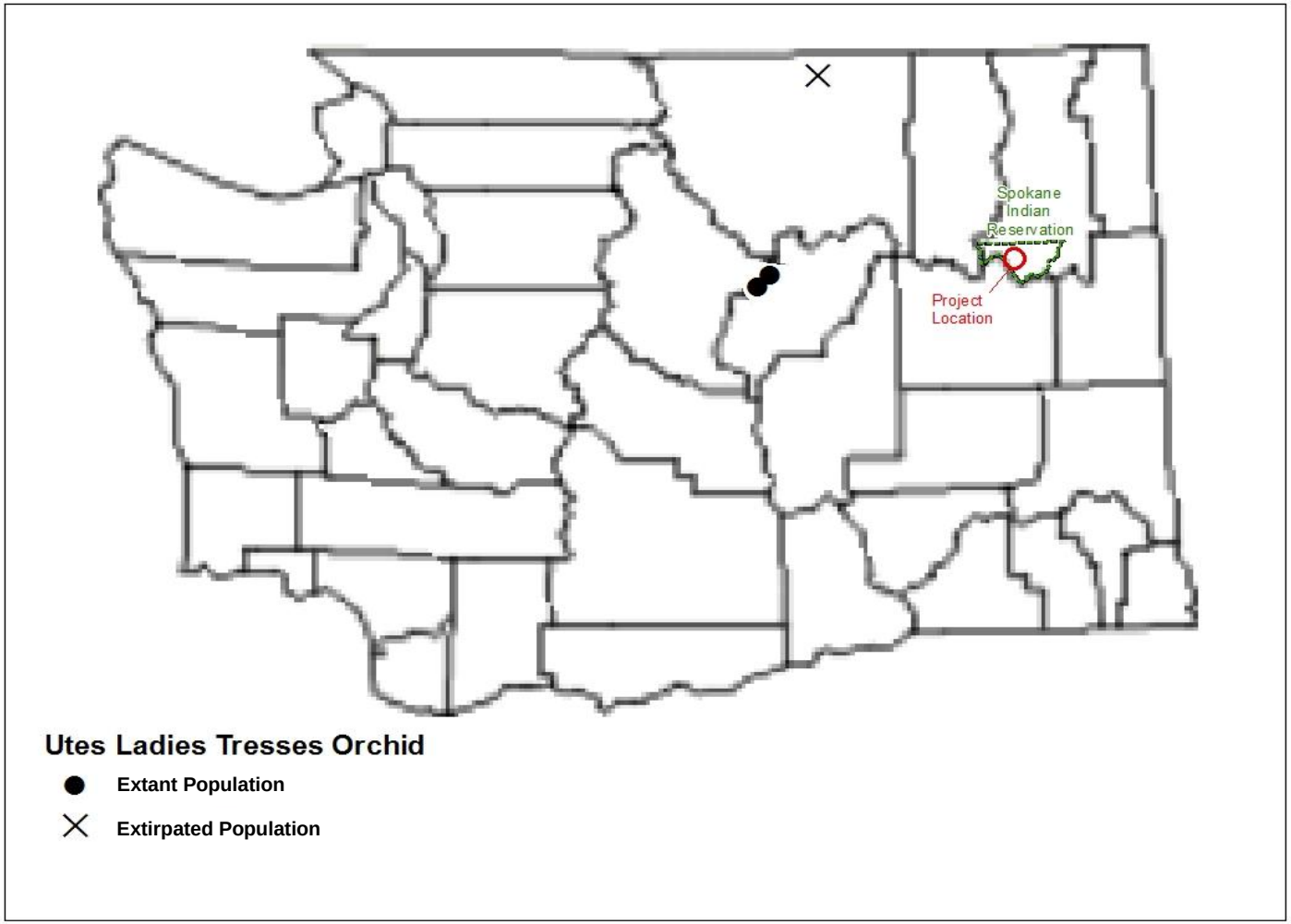

Source: Washington Department of Fish and Wildlife found at http://wdfw.wa.gov/conservation/gap/gapdata/mammals/gifs/urar.gif

## Figure 6. GAP Habitat Map for Grizzly Bear in Washington

There are an estimated 50 to 70 grizzly bears in the Selkirk Recovery Area. The Selkirk Recovery Area is 50 miles to the northeast from the Action Area. In 2011, Western Wildlife Outreach GPS tracked a female grizzly outside of the recovery area, near Colville, WA, approximately 60 miles from its previous known range. Colville is approximately 40 miles north of the project action area. There are no recent records of grizzly bear on the Spokane Reservation and are unlikely to be present in the Action Area.

## 5.4 Ute ladies'-tresses orchid (*Spiranthes diluvialis)*

Utes ladies'-tresses orchid is found in eight states including central Washington, eastern Idaho, northern and central Utah, southern Nevada, northern Colorado, western Nebraska, southeastern Wyoming and southwestern Montana. In Washington, Ute's ladies tresses orchid is known to occur in Okanogan and Chelan counties (Camp and Gamon, 2011) (Figure 7).




Source: Washington Natural Heritage Program found at: http://www1.dnr.wa.gov/nhp/refdesk/fguide/pdf/spdi.pdf

## Figure 7. Known Distribution of Ute's Ladies Tresses Orchid in Washington

This species occurs in broad low-elevation intermountain valley plains with deltaic meandered wetland complexes. It grows in temporarily inundated wet meadow zones and along stable channels with subsurface hydrology on calcareous substrate and relatively low vegetative cover. There are a few known sites that occur in periodically flooded alkaline flats adjacent to Ponderosa pine/Douglas fir woodlands and sagebrush steppe. In Washington State, Utes ladies' tresses orchid occur at elevations ranging from 720 to 1,500 ft. amsl, which falls within the elevational range of the Action Area (1,180 to 3,500 ft amsl).

Threats to Utes ladies' tresses include urban development, stream channelization, water diversion and other watershed alterations that change stream and flood stability. Pesticide use related to agricultural practices or landscape management may impact pollinators.

There are no sub-irrigated calcareous wetlands within the project action area. Surface hydrology along the banks of the Spokane Arm of Lake Roosevelt fluctuates greatly based on seasonal reservoir management and does not provide a suitable environment for this species. In addition, Blue Creek has a narrow bed and associated riparian corridor with no sub-irrigated calcareous soil. There is no designated Critical Habitat for Ute's ladies tresses orchid.

There are no known occurrences of Ute ladies'-tresses orchid in Stevens County and the project action area does not contain the necessary habitat constituents for this species.

# 6.0 EFFECTS

Of the four listed species analyzed, only bull trout has the potential to occur within the project action area. Canada lynx, Grizzly Bear and Ute ladies'-tresses are not likely to be present in the action area and therefore will not be affected by the project action. The potential effects of the project action on bull trout are further evaluated in Section 4.

The project action was analyzed for potential direct, indirect and cumulative effects on the bull trout. Direct effects are defined as those effects that would result in the direct loss of habitat associated with construction or the potential mortality or "take" of individuals. An example of direct effects would be the loss of habitat by heavy equipment within the project action footprint. Indirect effects would be alteration of conditions that may affect or disrupt the species behavior. Examples of indirect effects would be the loss of habitat associated with the importation of invasive weeds or sedimentation of waterways after the construction has been completed.

## 6.1 Direct Effects

Direct effects on bull trout associated with this project action could potentially result from disturbance of the lake bottom associated with the installation of the pipeline. The installation of the pipeline would occur in two phases with a portion of the pipeline being buried during seasonally low lake water and the remainder of the pipeline being buried during extreme low lake water associated with dam maintenance. Between these two periods, a portion of the pipeline and diffuser would be placed on the lake bottom. The length of the exposed pipeline is dependent upon the lake elevation during initial installation. The pipeline will be approximately eight inches in diameter and would be buried approximately two to four feet below the surface of the lake bottom. The temporary construction footprint for the pipeline would be approximately eight feet wide to include enough room for an excavator, the pipe material, and soil windrow. The pipeline and diffuser that would temporarily sit on the lake bottom would be assembled on shore and floated onto the lake and submerged with anchors. Once final construction is completed, only the pipeline below the extreme low water level and the diffuser will be present above the lake bottom. Bull trout are highly mobile and would likely swim to other areas of the lake during the placement of the pipeline and no direct mortality would occur.

## 6.2 Indirect Effects

Indirect effects to bull trout would be minor since bull trout do not inhabit Blue Creek and are only transient species in Lake Roosevelt and likely only present from accidental wash-over from upstream dams. Moving the water treatment plant discharge location from its current location in Blue Creek to Lake Roosevelt would improve water quality within Blue Creek, the Blue Creek Inlet, and Blue Creek Tributaries. No additional pollutants would be added to Lake Roosevelt as a result of moving the discharge location. The effect of the discharge in the historic Spokane River channel into Lake Roosevelt would be negligible since it is a larger body of water and currents would dilute the effluent much more quickly than at the Blue Creek Inlet. The water being discharged would comply with a newly issued NPDES permit that is pending from EPA and would comply with the Spokane Tribe of Indians Surface Water Quality Standards (STI, 2010) and would be unlikely to adversely affect bull trout. State of Washington Department of Ecology lists this section of Lake Roosevelt on the 1998 Section 303(d) list of impaired surface waters because they do not meet the state's water quality standards for total maximum daily loads (TMDLs) for dissolved oxygen, total phosphorus, and heavy metals i.e., zinc, cadmium, lead (SWDE, 2013). Zinc and cadmium are known to be harmful to salmonids and other aquatic life at relatively low concentrations resulting in bioaccumulation in fish tissue and bind to fish gills and cause suffocation (SWDE, 2013). The existing water quality in this section of Lake Roosevelt does not provide conditions preferred by bull trout. The discharge of the WTP effluent is not expected to adversely affect the few bull trout that inhabit Lake Roosevelt.

Lake temperatures near the discharge location range from 36 °F and 69 °F with a mean temperature of 52 °F. The current effluent temperature ranges from 56 °F to 71 °F with a mean temperature of 63 °F, between May and October. However, the temperature of the future WTP discharge during and following construction is not known. It is assumed that the temperature of the pit water will change once the pits are filled with mine waste and the Waste Containment Areas are covered. Any temperature differences in the effluent to the receiving water would likely disperse quickly in the mixing zone. The size of the temperature mixing zone is not yet known; however, the WTP effluent temperature will be monitored at the discharge location following installation of the discharge point and operation of the new water treatment plant. The maximum size of the chronic mixing zone for chemicals is approximately 190 feet from the diffuser port and 280 feet wide at the downstream terminus. It is anticipated that the temperature mixing zone would be smaller than the chemical mixing zone. The ambient temperature in Lake Roosevelt at the

proposed discharge location is outside of bull trout preferred range and exceeds their temperature tolerance from May through September. Any temperature differential in the mixing zone is expected to be relatively small and would not substantially change overall habitat condition for bull trout in Lake Roosevelt.

In addition, bull trout are highly mobile and would likely concentrate in those areas of the lake that are most suitable. The effects of the discharge of WTP effluent into Lake Roosevelt are expected to be localized and limited to the mixing zone. Other components of the project action would further improve water quality in the Blue Creek drainage as it flows to Lake Roosevelt, including the access roads and drainage clean up. Storm water runoff would no longer come into contact with contaminated sediments in the mine drainages and along the access roads once they are cleaned up. The change in the discharge location to Lake Roosevelt or the temporary construction is not expected to obstruct any potential migratory corridors or cause injury/mortality, due to temperature, dissolved oxygen, turbidity, habitat loss, or impact forage food availability.

Construction activities associated with remediation at the mine site and the new discharge pipeline could temporarily increase turbidity in Blue Creek and Lake Roosevelt. Although erosion control measures will be employed, such as the use of silt fence, straw bales, wattles, mulch, and revegetation, some erosion and turbidity could occur during high run-off events until native revegetation becomes established. Turbidity would be temporary and localized. Bull trout have not been found to occur within Blue Creek or the Blue Creek Inlet and are unlikely to be affected by this temporary turbidity.

# 7.0 CONCLUSION AND DETERMINATION

Of the species analyzed in this BA, the project action has the potential to affect only bull trout. For Canada lynx, grizzly bear and Ute ladies'-tresses, the action area is outside of the species range or suitable habitat does not occur within the action area. Thus, those species will not be affected by the project action.

The USFWS has documented a number of bull trout in Lake Roosevelt each year, but has determined that there are no spawning populations in Lake Roosevelt and any individuals present are likely accidental dam wash-over. Most records have been attributed to reports on the Upper Columbia River. The Blue Creek Pipeline would be installed approximately 3,540 linear feet in Lake Roosevelt. The pipe would be buried in two phases: first during the seasonal low lake water; and second during an extreme low lake water event.

The disturbance of the lake bottom during low water events would likely have a negligible impact on any bull trout in the area. Best management practices will be used as part of the construction, which will include erosion control devices such as silt fence or wattles to minimize the potential for temporary turbidity cause by the disturbance of the lake bottom. Erosion control measures would be used throughout the drainage clean up. A spill prevention controls and countermeasure plan will be prepared and implemented to minimize any inadvertent discharge into Lake Roosevelt. Following sediment clean up at the drainages, the bare soil would be stabilized and revegetated with native riparian species. The new discharge location would not likely affect those isolate individual bull trout in Lake Roosevelt since the effluent would be the same as current discharge and the new location would improve dilution.

Based on the potential presence of isolated bull trout within the project action area, the action "may affect, but would not likely adversely affect" bull trout. Lake Roosevelt provides poor habitat for bull trout because it lacks the necessary habitat constituents and water quality. The limited population present in the lake and installation of the pipeline during low lake level events make the chance of any incidental "take" extremely unlikely.

Because direct take and indirect take are unlikely as a result of this project action, no mitigation beyond the measures incorporated in the project action is being proposed.

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ATTACHMENT A

Agency Communication Log

| Date | Agency | Form | Summary |
|---|---|---|---|
| 3/15/2012 | USFWS | Generic Countywide letter | USFWS Stevens County Listed Species:<br>Canada Lynx<br>Grizzly Bear<br>Utes Ladies' Tresses Orchid<br>Bull Trout |
| 3/26/2013 | WA DFW, Priority Habitats and Species Report | Online Database Search | No ESA in project area |
| 4/23/2013 | NOAA Fisheries Service Habitat Program, Steve Landino | Mailed Letter | Request data on T&E anadromous fish |
| 4/23/2013 | Spokane Tribe DNR, Brian Crossley | Mailed Letter | Request T&E fish species |
| 4/23/2013 | WA Natural Heritage Program, John Gamon | Mailed Letter | Request T&E plant species |
| 4/23/2013 | USFWS, Mark Miller | Mailed Letter | Request T&E species and eagle data |
| 4/23/2013 | WA Dept. Fish and Wildlife, Priority Habitat and Species, Lori Guggenmos | Mailed Letter | Request T&E species and eagle data |
| 4/23/2013 | Spokane Tribe DNR, Katie Eaton | Mailed Letter | Request T&E wildlife species and eagle data |
| 5/1/2013 | STI DNR, Katie Eaton | email | No terrestrial ESA known to be present on the Reservation and no known eagle nests known with project area. |
| 5/6/2013 | WA NHP, Jasa Holt | email | No rare plants or high quality native ecosystems in vicinity of project. |
| 5/15/2013 | STI Water and Fish Manager - Casey Flanagan | email | Described fish present in Blue Creek Watershed |
| 5/30/2013 | STI Water and Fish Manager - Casey Flanagan | email | Provided 2000 annual report and BPA report |
| 6/3/2013 | WA Dept. Fish and Wildlife, Priority Habitat and Species, Lori Guggenmos | Mailed letter | Bull Trout record in Blue Creek Inlet |
| 6/14/2013 | Eastern Washington University, Dr. Allan Scholz | email | Follow up on STI IRMP bull trout citation |
| 6/17/2013 | Eastern Washington University, Dr. Allan Scholz | email | He has not collected bull trout at the mouth of Blue Creek |

| Date | Agency | Form | Summary |
|---|---|---|---|
| 7/12/2013 | NOAA, National Marine Fisheries, Steve Landino to Frankie Johnson | call | She suggested contacting Dale Bambrick of NOAA |
| 7/15/2013 | USFWS, Michelle Ames | call | Follow up on species specific list and data, she provided overview of species geography and issues, suggested I speak to Julie Campbell for more on Bull Trout. |
| 7/15/2013 | NOAA, National Marine Fisheries, Dale Bambrick to Justin Yeager | call | He stated that they don't regulate fish above the Chief Joseph Dam |
| 7/15/2013 | USFWS, Julie Campbell | call | Reaffirmed, no Bull Trout spawning habitat in Lake Roosevelt and any incidental records are likely from Lake |
| 1/21/2014 | STI DNR Lake Roosevelt Fisheries, Brent Nichols | call | Left v-mail |
| 1/22/2014 | STI DNR Lake Roosevelt Fisheries, Brent Nichols | call | Does not have any records of Bull Trout in and around the project area, suggested that I review the reports at CBFish.org with the title search "Lake Roosevelt fisheries evaluation" |
| 1/22/2014 | WA DFW, Andrew Weiss | email | Does not have a source for Blue Creek Bull Trout record, suggested that the source could be from a mapping review party in Spokane 2006/2007 and suggested that I call WA DFW District 1 Biologist, Bill Baker. |
| 1/22/2014 | Columbia Basin Fish and Wildlife Program | CBFish.org Lake Roosevelt Fisheries Annual Reports covering fish data between 1989 and 2009 | Gill Net Survey 1993 to 2004 - No bull trout recorded<br>Electrofishing 1989 to 2009 - Bull trout recorded<br><1% abundance in 1989<br><1% abundance in 1990<br><1% abundance in 1994<br><1% abundance in 1995<br>two bull trout in 2000<br>one bull trout 2001<br>one bull trout in 2002<br>Big Sheep Creek fish trap recorded 1 bull trout in 2004. |
| 1/23/2014 | WA DFW, Bill Baker | call | Left v-mail |
| 1/24/2014 | WA DFW, Bill Baker | call | No viable population in Lake Roosevelt, would rely on Spokane Tribes and Al Scholz records than DFW |

ATTACHMENT B

NPDES Permit Application

Please print or type in the unshaded areas only.

Form Approved. OMB No. 2040-0086.

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

# GENERAL INFORMATION

*Consolidated Permits Program*

*(Read the "General Instructions" before starting.)*

I. EPA I.D. NUMBER: F WA980978753 D

LABEL ITEMS

- I. EPA I.D. NUMBER
- III. FACILITY NAME
- V. FACILITY MAILING ADDRESS
- VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

## II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms**.

| SPECIFIC QUESTIONS | Mark "X" YES | NO | FORM ATTACHED | SPECIFIC QUESTIONS | Mark "X" YES | NO | FORM ATTACHED |
|---|---|---|---|---|---|---|---|
| A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A) | | X | | B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B) | | X | |
| | 16 | 17 | 18 | | 19 | 20 | 21 |
| C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C) | X | | | D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D) | | X | |
| | 22 | 23 | 24 | | 25 | 26 | 27 |
| E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3) | | X | | F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4) | | X | |
| | 28 | 29 | 30 | | 31 | 32 | 33 |
| G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4) | | X | | H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4) | | X | |
| | 34 | 35 | 36 | | 37 | 38 | 39 |
| I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5) | | X | | J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5) | | X | |
| | 40 | 41 | 42 | | 43 | 44 | 45 |

## III. NAME OF FACILITY

1 SKIP: MIDNITE MINE

## IV. FACILITY CONTACT

| A. NAME & TITLE *(last, first, & title)* | B. PHONE *(area code & no.)* |
|---|---|
| 2 William S. LYLE | (509) 285-4511 |

## V. FACILTY MAILING ADDRESS

A. STREET OR P.O. BOX: 3 PO BOX 250

| B. CITY OR TOWN | C. STATE | D. ZIP CODE |
|---|---|---|
| 4 FORD | WA | 99013 |

## VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: 5 6834 FORD-WELLPINIT ROAD

B. COUNTY NAME: STEVENS COUNTY

| C. CITY OR TOWN | D. STATE | E. ZIP CODE | F. COUNTY CODE *(if known)* |
|---|---|---|---|
| 6 SPOKANE RESERVATION | WA | 99129 | |



CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

**VII. SIC CODES** *(4-digit, in order of priority)*

| A. FIRST | B. SECOND |
|---|---|
| 1094 (specify) Uranium - Radium-Vanadium Ores | (specify) |

| C. THIRD | D. FOURTH |
|---|---|
| (specify) | (specify) |

**VIII. OPERATOR INFORMATION**

| A. NAME | B. Is the name listed in Item VIII-A also the owner? |
|---|---|
| DAWN MINING COMPANY LLC | ☑ YES ☐ NO |

C. STATUS OF OPERATOR *(Enter the appropriate letter into the answer box: if "Other," specify.)*

F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC *(other than federal or state)*
O = OTHER *(specify)*

P

(specify)

D. PHONE *(area code & no.)*: A (509) 258-4511

E. STREET OR P.O. BOX: PO BOX 250

| F. CITY OR TOWN | G. STATE | H. ZIP CODE | IX. INDIAN LAND |
|---|---|---|---|
| FORD | WA | 99013 | Is the facility located on Indian lands? ☑ YES ☐ NO |

**X. EXISTING ENVIRONMENTAL PERMITS**

| A. NPDES *(Discharges to Surface Water)* | D. PSD *(Air Emissions from Proposed Sources)* |
|---|---|
| 9 N WA-002572-1 | 9 P |

| B. UIC *(Underground Injection of Fluids)* | E. OTHER *(specify)* |
|---|---|
| 9 U | 9 (specify) |

| C. RCRA *(Hazardous Wastes)* | E. OTHER *(specify)* |
|---|---|
| 9 R | 9 10-2009-0026 (specify) CERCLA |

**XI. MAP**

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements.

**XII. NATURE OF BUSINESS** *(provide a brief description)*

Midnite Mine is an inactive open-pit uranium mine located on the Spokane Indian Reservation in rural Stevens County. Uranium-bearing rock exposed due to mining are a source of radiation, and acid rock drainage has mobilized heavy metals.

Under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, 42 USC §9601 et seq., Environmental Protection Agency (EPA)Region 10 issued a Unilateral Administrative Order (UAO) for Phase I Remedial Design and Remedial Action, EPA Docket No. CERCLA-10-2009-0026 as described in the Consent Decree, CIVIL ACTION NO. CV-05-020-JLQ.

The nature of the business is to implement the Remedial Action that disposes of the contaminated mine waste rock, proto-ore, and soil and treats contaminated surface water and groundwater. Part of the Remedial Action requires the construction of a new water treatment plant (WTP) to replace the existing WTP. The new WTP will discharge treated water to the Spokane Arm of Lake Roosevelt.

**XIII. CERTIFICATION** *(see instructions)*

*I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.*

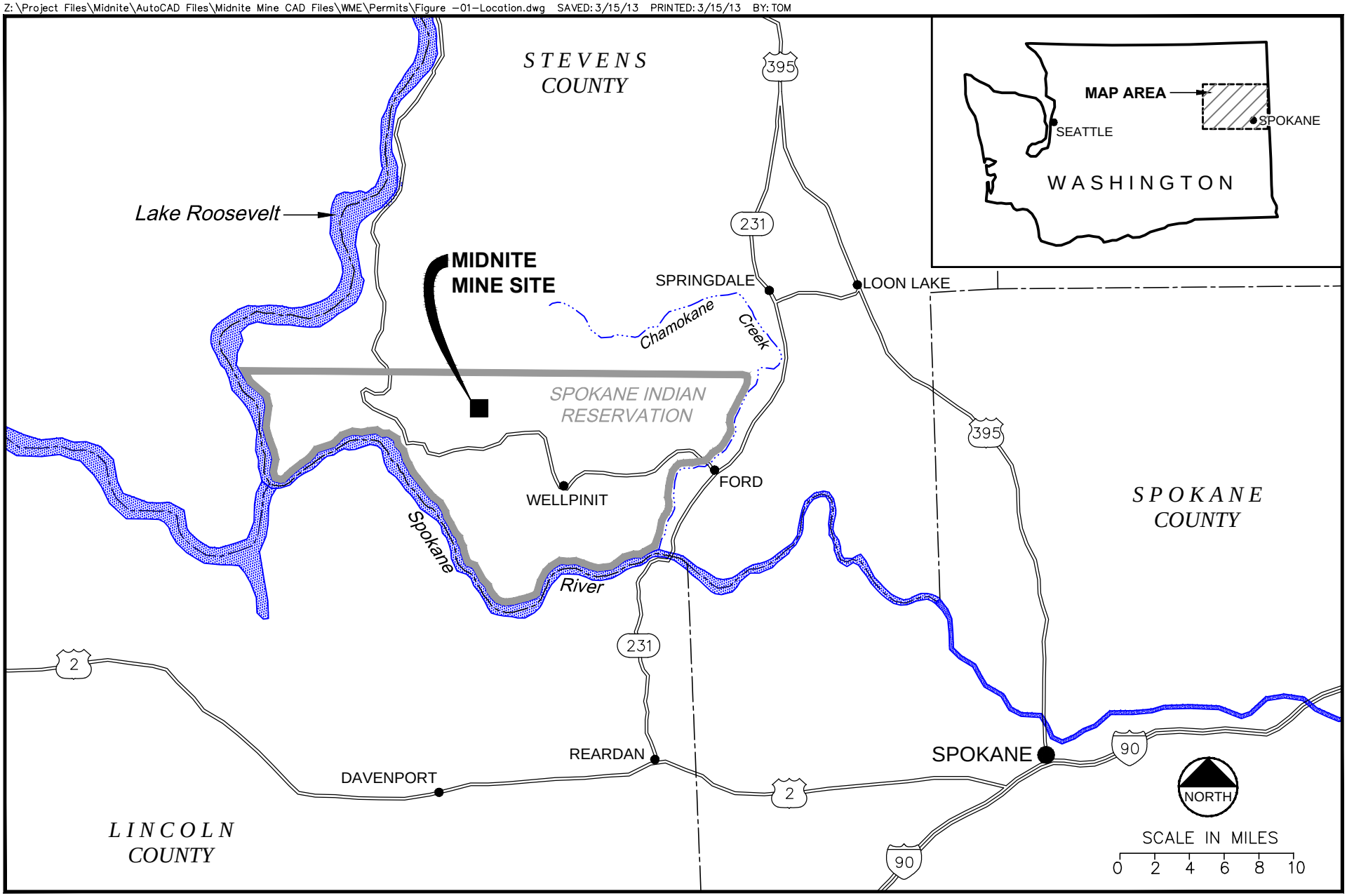
| A. NAME & OFFICIAL TITLE *(type or print)* | B. SIGNATURE | C. DATE SIGNED |
|---|---|---|
| William S. Lyle, Vice President | William S. Lyle | March 20, 2013 |

**COMMENTS FOR OFFICIAL USE ONLY**

C

EPA Form 3510-1 (8-90)

Z:\Project Files\Midnite\AutoCAD Files\Midnite Mine CAD Files\WME\Permits\Figure -01-Location.dwg SAVED: 3/15/13 PRINTED: 3/15/13 BY: TOM




March 2013

WORTHINGTON
MILLER
ENVIRONMENTAL, LLC.

**Figure 1**
**Midnite Mine Site Location Map**

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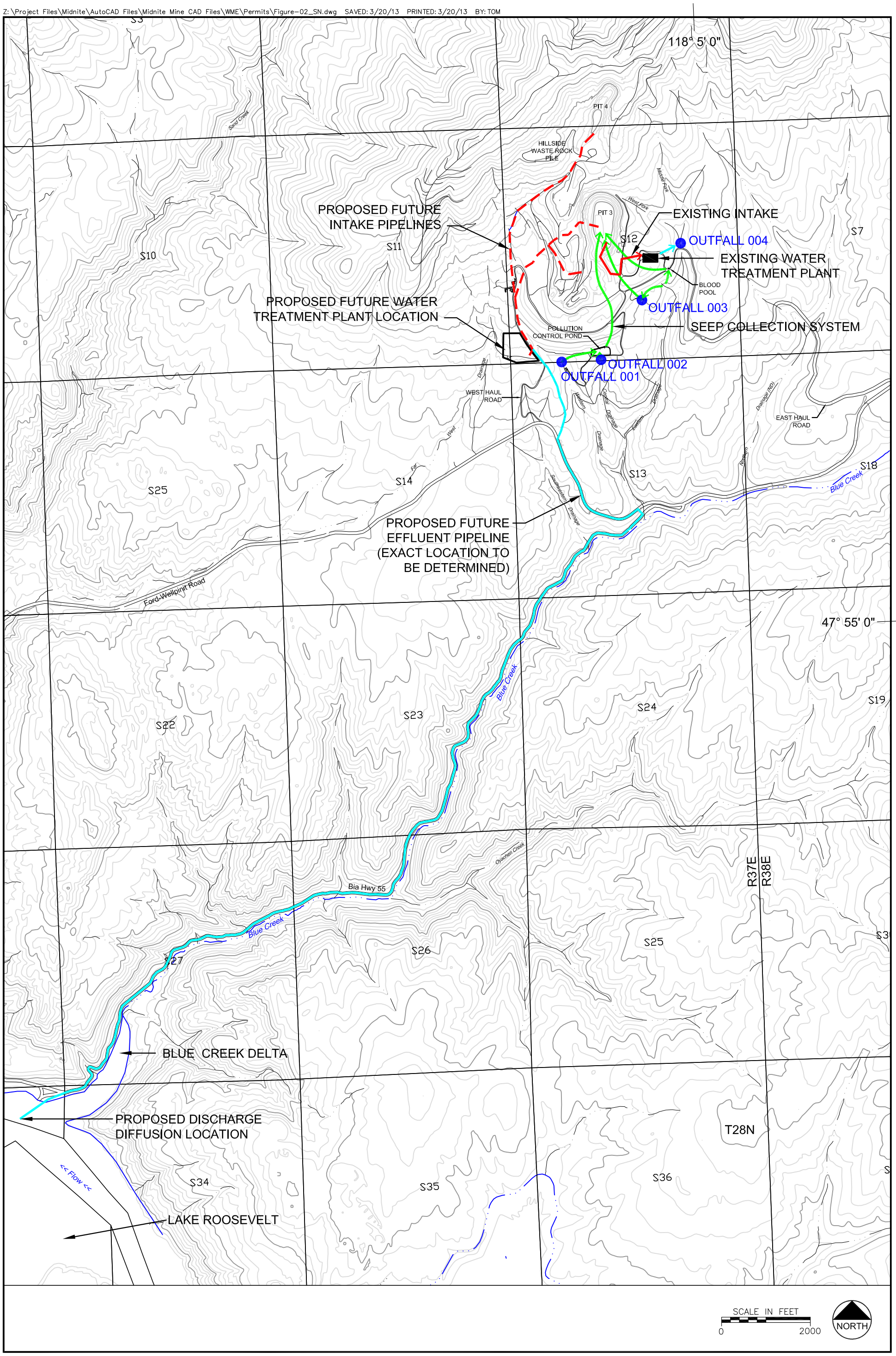


| | |
|---|---|
| WORTHINGTON MILLER ENVIRONMENTAL, LLC. | FIGURE 2<br>EXISTING AND PROPOSED FUTURE WATER TREATMENT FACILITIES<br>MIDNITE MINE SITE |

| | |
|---|---|
| Date: | MARCH 2013 |
| Project: | MIDNITE |
| File: | FIGURE-02 |

Please print or type in the unshaded areas only.

EPA I.D. NUMBER (*copy from Item 1 of Form 1*): WA980978753

Form Approved.
OMB No. 2040-0086.
Approval expires 3-31-98.

**FORM 2C NPDES**

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
**EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURE OPERATIONS**
*Consolidated Permits Program*

## I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

| A. OUTFALL NUMBER (*list*) | B. LATITUDE | | | C. LONGITUDE | | | D. RECEIVING WATER (*name*) |
|---|---|---|---|---|---|---|---|
| | 1. DEG. | 2. MIN. | 3. SEC. | 1. DEG. | 2. MIN. | 3. SEC. | |
| 001 | 47.00 | 55.00 | 59.72 | 118.00 | 5.00 | 50.22 | Pollution Control Pond to Pit 3 |
| 002 | 47.00 | 55.00 | 59.84 | 118.00 | 5.00 | 37.34 | Pollution Control Pond to Pit 3 |
| 003 | 47.00 | 56.00 | 12.81 | 118.00 | 5.00 | 23.11 | Pit 3 |
| 004 | 47.00 | 56.00 | 19.70 | 118.00 | 5.00 | 13.96 | Eastern Drainage - trib to Blue Creek |
| 005 | 47.00 | 53.00 | 13.16 | 118.00 | 8.00 | 56.80 | Spokane Arm of Lake Roosevelt |

## II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (*e.g., for certain mining activities*), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

| 1. OUTFALL NO. (*list*) | 2. OPERATION(S) CONTRIBUTING FLOW | | 3. TREATMENT | | |
|---|---|---|---|---|---|
| | a. OPERATION (*list*) | b. AVERAGE FLOW (*include units*) | a. DESCRIPTION | b. LIST CODES FROM TABLE 2C-1 | |
| 001 | Captures stream and groundwater seep | 18 to 1,000 gpm | Captured water transferred to Pollution Control Pond and pumped to Pit 3 for storage prior to | 4-A | |
| | (mine affected water) | | treatment. | | |
| | | | | | |
| | | | | | |
| 002 | Captures groundwater seep | few gpm | Captured water transferred to Pollution Control Pond and pumped to Pit 3 for storage prior to | 4-A | |
| | (mine affected water) | | treatment | | |
| | | | | | |
| | | | | | |
| 003 | Captures groundwater seep | up to 50 gpm | Captured water pumped to Pit 3 for storage prior to treatment. | 4-A | |
| | (mine affected water) | | | | |
| | | | | | |
| | | | | | |
| 004/ 005 | Water Treatment Plant (from Pit 3) | - not stormwater dependent | | | |
| | -Uranium Removal - IX (future) | 70 MGal/yr | Ion Exchange/Sorption | 2-J | 1-X |
| | -Barium Chorlide | 70 MGal/yr | Chemical Precipitation | 2-C | |
| | -Lime | 70 MGal/yr | Chemical Precipitation | 2-C | 2K |
| 004/ 005 | Surface water discharge | 70 MGal/yr | Discharge to Lake Roosevelt (formerly Blue Creek). | 4-A | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

OFFICIAL USE ONLY (*effluent guidelines sub-categories*)

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☑ YES (*complete the following table*) ☐ NO (*go to Section III*)

| 1. OUTFALL NUMBER (*list*) | 2. OPERATION(s) CONTRIBUTING FLOW (*list*) | 3. FREQUENCY a. DAYS PER WEEK (*specify average*) | 3. FREQUENCY b. MONTHS PER YEAR (*specify average*) | 4. FLOW a. FLOW RATE (*in mgd*) 1. LONG TERM AVERAGE | 4. FLOW a. FLOW RATE (*in mgd*) 2. MAXIMUM DAILY | 4. FLOW B. TOTAL VOLUME (*specify with units*) 1. LONG TERM AVERAGE | 4. FLOW B. TOTAL VOLUME (*specify with units*) 2. MAXIMUM DAILY | C. DURATION (*in days*) |
|---|---|---|---|---|---|---|---|---|
| 001 | Groundwater Seep | 7 | 12 | 0.13 | 1.4 | 49 Mgal/yr | 1.4 Mgal | 365 |
| 002 | Groundwater Seep | 7 | 12 | 0.018 | 0.004 | 7 Mgal/yr | 0.004Mgal | 365 |
| 003 | Groundwater Seep | 7 | 12 | 0.038 | 0.07 | 14 Mgal/yr | 0.07 Mgal | 365 |
| 004/005 | Treatment of water | 7 | 12 | 0.19 | 0.78 | 70 Mgal/yr | 0.78 Mgal | 365 |
| | * Existing WTP approx. 120 days/yr<br>New WTP anticipated 365 days/yr | | | | | | | |

## III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☑ YES (*complete Item III-B*) ☐ NO (*go to Section IV*)

B. Are the limitations in the applicable effluent guideline expressed in terms of production (*or other measure of operation*)?

☐ YES (*complete Item III-C*) ☑ NO (*go to Section IV*)

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

| 1. AVERAGE DAILY PRODUCTION a. QUANTITY PER DAY | 1. AVERAGE DAILY PRODUCTION b. UNITS OF MEASURE | 1. AVERAGE DAILY PRODUCTION c. OPERATION, PRODUCT, MATERIAL, ETC. (*specify*) | 2. AFFECTED OUTFALLS (*list outfall numbers*) |
|---|---|---|---|
| | | | |

## IV. IMPROVEMENTS

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operations of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☑ YES (*complete the following table*) ☐ NO (*go to Item IV-B*)

| 1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC. | 2. AFFECTED OUTFALLS a. NO. | 2. AFFECTED OUTFALLS b. SOURCE OF DISCHARGE | 3. BRIEF DESCRIPTION OF PROJECT | 4. FINAL COMPLIANCE DATE a. REQUIRED | 4. FINAL COMPLIANCE DATE b. PROJECTED |
|---|---|---|---|---|---|
| Midnite Mine Consent Decree CERCLA Action No. 10-2009-0026 | 004/005 | Midnite Mine Water Treatment Plant | Midnite Mine Remediation - Construct new WTP and move outfall 004 to Spokane Arm of Lake Roosevelt. | | 12/18/2015 |
| | 001/002/003 | Ground Water Seeps | Water collection points will change as remedy is implemented. | | |

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (*or other environmental projects which may affect your discharges*) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction.

☐ MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED

EPA I.D. NUMBER (*copy from Item 1 of Form 1*)
WA980978753

CONTINUED FROM PAGE 2

## V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding – Complete one set of tables for each outfall – Annotate the outfall number in the space provided.
NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

| 1. POLLUTANT | 2. SOURCE | 1. POLLUTANT | 2. SOURCE |
|---|---|---|---|
| Strontium<br>Uranium<br>Vanadium | Uranium Mine Contaminant<br>Uranium Mine Contaminant<br>Uranium Mine Contaminant<br>(See data in analyte table) | | |

## VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ YES (*list all such pollutants below*)  ☑ NO (*go to Item VI-B*)

CONTINUED FROM THE FRONT

## VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☑ YES (*identify the test(s) and describe their purposes below*) ☐ NO (*go to Section VIII*)

The Whole Effluent Toxicity Testing Report (GEI, 2012) shows that acute testing has been consistently within limits. The hypothesis testing and the power standard were used for the administratively suspended NPDES permit (No. WA-002572-1). The results of the test showed no toxicity of either of the acute tests and control performance criteria were detected. There were no significant effects on chronic Ceriodaphnia dubia survival test. However, there were effects on reproduction. An IC25 (Inhibition Concentration) of >100% effluent and a No Observable Effect Concentration (NOEC) of 70% effluent were determined and control performance criteria were met. There were no significant effects in the chronic Pimephales promelas test and control performance criteria were met.

The power standard of ≤ 29% was met for both acute tests. The power standard of ≤ 39% was met for the chronic P. promelas test for both survival and growth as well as for the C. dubia test for survival. The percent difference for C. dubia reproduction was 45% which is above the power standard of 39%. No observed effects (NOEL) and lowest observed effect (LOEL) at 100% effluent. The power standard is a calculated relative percent standard (RPD) between the reproduction or growth controls and 86% effluent as required in the Permit. See attached for full report.

## VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☑ YES (*list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below*) ☐ NO (*go to Section IX*)

| A. NAME | B. ADDRESS | C. TELEPHONE (*area code & no.*) | D. POLLUTANTS ANALYZED (*list*) |
|---|---|---|---|
| Energy Laboratories, Inc. | 2393 Salt Creek Hwy.<br>Casper, WY 8260<br>2325 Kerzell Lane<br>Casper, WY 82601 | (307) 235-0515 | Gross Alpha, Gross Beta, Gross Gamma, Pb 210, Total Ra 226, Total Th, Isotopic Uranium, Isotopic and Total H-3 |
| ACZ Laboratories | 2773 Downhill Drive Steamboat Springs, CO 80487 | (800) 334-5493 | Al, Sb, AS, Ba, Be, Bi, B, Bt, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mn, Hg, Mo, Ni, K, Se, SiO2, S, Ag, Na, Sr-90, Sr, Tl, Sn, Ti, U, V, Zn, CaCO3, Br, Cl, F, NO3No2, pH, P, SO4, TDS, TSS, HCO3, CO3, Cl, F, OH, NO2+NO3, NO3, NO2, pH |
| GEI Consultants, Inc. | 4601 DTC Blvd<br>Suite 900<br>Denver, CO 80237 | (303) 662-0100 | Whole Effluent Toxicity Testing |

## IX. CERTIFICATION

*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*

| A. NAME & OFFICIAL TITLE (*type or print*) | B. PHONE NO. (*area code & no.*) |
|---|---|
| William S. Lyle, Vice President | (509) 258-4511 |
| **C. SIGNATURE** | **D. DATE SIGNED** |
| William S. Lyle | March 20, 2013 |

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (*use the same format*) instead of completing these pages.
SEE INSTRUCTIONS.

EPA I.D. NUMBER (*copy from Item 1 of Form 1*): WA980978753

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO. 004/005

PART A –You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

| 1. POLLUTANT | 2. EFFLUENT | | | | | | | 3. UNITS (*specify if blank*) | | 4. INTAKE (*optional*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | a. MAXIMUM DAILY VALUE | | b. MAXIMUM 30 DAY VALUE (*if available*) | | c. LONG TERM AVRG. VALUE (*if available*) | | d. NO. OF ANALYSES | a. CONCEN-TRATION | b. MASS | a. LONG TERM AVERAGE VALUE | | b. NO. OF ANALYSES |
| | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | | | | (1) CONCENTRATION | (2) MASS | |
| a. Biochemical Oxygen Demand (*BOD*) | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| b. Chemical Oxygen Demand (*COD*) | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| c. Total Organic Carbon (*TOC*) | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| d. Total Suspended Solids (*TSS*) | 7 | 13.7 | NA | NA | 5.5 [a] | 11.6 | 6 | mg/L | kg | <5 [a] | 11.6 | 6 |
| e. Ammonia (*as N*) | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| f. Flow May-Oct 2011/2012 | VALUE 779,800 | | VALUE NA | | VALUE 70 Mgal/yr | | 244 | Mgal/yr | | VALUE 70 Mgal/yr | | 244 |
| g. Temperature (*winter*) | VALUE NA | | VALUE NA | | VALUE NA | | 0 | °C | | VALUE NA | | 0 |
| h. Temperature (*summer*) Jun-Oct | VALUE 21.9 | | VALUE NA | | VALUE 17.3 | | 5 | °C | | VALUE 15.8 | | 5 |
| i. pH | MINIMUM 5.7 | MAXIMUM 7.0 | MINIMUM NA | MAXIMUM NA | | | 6 | STANDARD UNITS | | | | |

PART B – Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

| 1. POLLUTANT AND CAS NO. (*if available*) | 2. MARK "X" | | 3. EFFLUENT | | | | | | | 4. UNITS | | 5. INTAKE (*optional*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | a. BELIEVED PRESENT | b. BELIEVED ABSENT | a. MAXIMUM DAILY VALUE | | b. MAXIMUM 30 DAY VALUE (*if available*) | | c. LONG TERM AVRG. VALUE (*if available*) | | d. NO. OF ANALYSES | a. CONCEN-TRATION | b. MASS | a. LONG TERM AVERAGE VALUE | | b. NO. OF ANALYSES |
| | | | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | | | | (1) CONCENTRATION | (2) MASS | |
| a. Bromide (24959-67-9) | X | | 0.4 | 1,022 | NA | NA | <0.2 [a] | <555.9 | 6 | mg/L | g | <0.2 [a] | 590.1 | 6 |
| b. Chlorine, Total Residual | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| c. Color | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| d. Fecal Coliform | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| e. Fluoride (16984-48-8) | X | | 1.7 | 3.3 | NA | NA | 1.4 [a] | 2.8 | 6 | mg/L | kg | 1.7 | 3.6 | 6 |
| f. Nitrate-Nitrite (*as N*) | X | | 0.38 | 971 | NA | NA | 0.35 [a] | 494 | 6 | mg/L | g | 0.38 [a] | 609 | 6 |



See Page V-9 for footnotes.

ITEM V-B CONTINUED FROM FRONT

| 1. POLLUTANT AND CAS NO. (*if available*) | 2. MARK "X" | | 3. EFFLUENT | | | | | | | 4. UNITS | | 5. INTAKE (*optional*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | a. BELIEVED PRESENT | b. BELIEVED ABSENT | a. MAXIMUM DAILY VALUE | | b. MAXIMUM 30 DAY VALUE (*if available*) | | c. LONG TERM AVRG. VALUE (*if available*) | | d. NO. OF ANALYSES | a. CONCEN-TRATION | b. MASS | a. LONG TERM AVERAGE VALUE | | b. NO. OF ANALYSES |
| | | | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | | | | (1) CONCENTRATION | (2) MASS | |
| g. Nitrogen, Total Organic (*as N*) | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| h. Oil and Grease | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| i. Phosphorus (as P), Total (7723-14-0) | X | | 0.05 | 98.04 | NA | NA | 0.025 | 49.22 | 6 | mg/L | g | <0.01 [a] | 25.17 | 6 |
| j. Radioactivity | | | | | | | | | | | | | | |
| (1) Alpha, Total | X | | 84.2 | NA | NA | NA | 22.6 [b] | NA | 17 | pCi/L | NA | 11,432 | NA | 6 |
| (2) Beta, Total | X | | 41.6 | NA | NA | NA | 27.2 | NA | 6 | pCi/L | NA | 4,770 [b] | NA | 6 |
| (3) Radium, Total | X | | NA [d] | NA [d] | NA [d] | NA [d] | NA [d] | NA [d] | NA [d] | NA [d] | NA [d] | NA [d] | NA [d] | NA [d] |
| (4) Radium 226, Total | X | | 0.75 | 1.99 | NA | NA | 0.30 [b] | 0.80 | 17 | pCi/L | µg | 22.0 [b] | 0.8 | 6 |
| k. Sulfate (*as $SO_4$*) (14808-79-8) | X | | 2,200 | 5,534 | NA | NA | 1,859 | 4,112 | 17 | mg/L | kg | 1,965 | 4,306 | 6 |
| l. Sulfide (*as S*) | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| m. Sulfite (*as $SO_3$*) (14265-45-3) | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| n. Surfactants | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| o. Aluminum, Total (7429-90-5) | X | | 130 | 342 | NA | NA | 70 [a] | 175 | 17 | µg/L | g | 23,500 | 50911 | 6 |
| p. Barium, Total (7440-39-3) | X | | 78 | 192 | NA | NA | 68 | 138 | 6 | µg/L | g | <6 [a] | 16.0 | 6 |
| q. Boron, Total (7440-42-8) | X | | 30 | 66.4 | NA | NA | <20 [a] | <41.1 | 6 | µg/L | g | <20 [a] | 44 | 6 |
| r. Cobalt, Total (7440-48-4) | X | | 3.4 | 7.9 | NA | NA | 2.7 | 5.5 | 6 | µg/L | g | 499 | 1,096 | 6 |
| s. Iron, Total (7439-89-6) | X | | 50 | 111 | NA | NA | <40 [a] | <78 | 6 | µg/L | g | 107 [b] | 241 | 6 |
| t. Magnesium, Total (7439-95-4) | X | | 111 | 218 | NA | NA | 89 | 178 | 6 | mg/L | kg | 203 | 439 | 6 |
| u. Molybdenum, Total (7439-98-7) | X | | 8 | 17.7 | NA | NA | 6.2 | 12.3 | 6 | µg/L | g | 2 [a] | 4.9 | 6 |
| v. Manganese, Total (7439-96-5) | X | | 190 | 441 | NA | NA | 99 [b] | 225 | 17 | µg/L | g | 35,270 | 76734 | 6 |
| w. Tin, Total (7440-31-5) | X | | <200 | <511 | NA | NA | NA [c] | NA [c] | 6 | µg/L | g | NA [c] | NA [c] | 6 |
| x. Titanium, Total (7440-32-6) | X | | 20 | 44.2 | NA | NA | 10 [a] | 22.7 | 6 | µg/L | g | 10 [a] | 26.7 | 6 |


See Page V-9 for footnotes.
CONTINUE ON PAGE V-3

| EPA I.D. NUMBER (*copy from Item 1 of Form 1*) | OUTFALL NUMBER |
|---|---|
| WA980978753 | 004/005 |

CONTINUED FROM PAGE 3 OF FORM 2-C

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (*secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions*), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (*all 7 pages*) for each outfall. See instructions for additional details and requirements.

| 1. POLLUTANT AND CAS NUMBER (*if available*) | 2. MARK "X" | | | 3. EFFLUENT | | | | | | | 4. UNITS | | 5. INTAKE (*optional*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | a. TESTING REQUIRED | b. BELIEVED PRESENT | c. BELIEVED ABSENT | a. MAXIMUM DAILY VALUE (1) CONCENTRATION | a. MAXIMUM DAILY VALUE (2) MASS | b. MAXIMUM 30 DAY VALUE (*if available*) (1) CONCENTRATION | b. MAXIMUM 30 DAY VALUE (*if available*) (2) MASS | c. LONG TERM AVRG. VALUE (*if available*) (1) CONCENTRATION | c. LONG TERM AVRG. VALUE (*if available*) (2) MASS | d. NO. OF ANALYSES | a. CONCENTRATION | b. MASS | a. LONG TERM AVERAGE VALUE (1) CONCENTRATION | a. LONG TERM AVERAGE VALUE (2) MASS | b. NO. OF ANALYSES |
| METALS, CYANIDE, AND TOTAL PHENOLS | | | | | | | | | | | | | | | |
| 1M. Antimony, Total (7440-36-0) | X | | | <0.8 | <2 | NA | NA | NA [c] | NA [c] | 6 | µg/L | g | NA [c] | NA [c] | 6 |
| 2M. Arsenic, Total (7440-38-2) | X | | | 1.1 | 2.69 | NA | NA | <1 [a] | <1.87 | 17 | µg/L | g | <1 [a] | 5.02 | 6 |
| 3M. Beryllium, Total (7440-41-7) | X | | | <0.2 | <0.5 | NA | NA | NA [c] | NA [c] | 6 | µg/L | g | 16.9 | 37.1 | 6 |
| 4M. Cadmium, Total (7440-43-9) | X | | | <0.2 | <0.5 | NA | NA | NA [c] | NA [c] | 6 | µg/L | g | 23.8 | 52.2 | 6 |
| 5M. Chromium, Total (7440-47-3) | X | | | 1 | 2.6 | NA | NA | <1 [a] | <2 | 6 | µg/L | g | NA [c] | NA [c] | 6 |
| 6M. Copper, Total (7440-50-8) | X | | | 4 | 8.8 | NA | NA | 3 | 6.1 | 6 | µg/L | g | 89 [b] | 194 | 6 |
| 7M. Lead, Total (7439-92-1) | X | | | 5.5 | 12.2 | NA | NA | <0.2 [a] | <2.4 | 6 | µg/L | g | 4.0 [b] | 10.0 | 6 |
| 8M. Mercury, Total (7439-97-6) | X | | | 0.0061 | 15.5 | NA | NA | 0.0044 [a] | 7.7 | 17 | µg/L | mg | 0.001 [a] | 4.96 | 6 |
| 9M. Nickel, Total (7440-02-0) | X | | | 15 | 29 | NA | NA | 11 | 22 | 6 | µg/L | g | 798 | 1,752 | 6 |
| 10M. Selenium, Total (7782-49-2) | X | | | <1 | <3 | NA | NA | NA [c] | NA [c] | 6 | µg/L | g | NA [c] | NA [c] | 6 |
| 11M. Silver, Total (7440-22-4) | X | | | <0.1 | <0.3 | NA | NA | NA [c] | NA [c] | 6 | µg/L | g | NA [c] | NA [c] | 6 |
| 12M. Thallium, Total (7440-28-0) | X | | | 0.4 | 2.6 | NA | NA | <0.2 [a] | 0.6 | 17 | µg/L | g | <0.2 [a] | 0.5 | 6 |
| 13M. Zinc, Total (7440-66-6) | X | | | 14 | 32.5 | NA | NA | 9.5 | 19.7 | 6 | µg/L | g | 1,722 | 3,783 | 6 |
| 14M. Cyanide, Total (57-12-5) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 15M. Phenols, Total | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| DIOXIN | | | | | | | | | | | | | | | |
| 2,3,7,8-Tetra-chlorodibenzo-P-Dioxin (1764-01-6) | | | X | DESCRIBE RESULTS NA | | | | | | | | | | | |



See Page V-9 for footnotes.

CONTINUED FROM THE FRONT

| 1. POLLUTANT AND CAS NUMBER (*if available*) | 2. MARK "X" | | | 3. EFFLUENT | | | | | | | 4. UNITS | | 5. INTAKE (*optional*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | a. TESTING REQUIRED | b. BELIEVED PRESENT | c. BELIEVED ABSENT | a. MAXIMUM DAILY VALUE | | b. MAXIMUM 30 DAY VALUE (*if available*) | | c. LONG TERM AVRG. VALUE (*if available*) | | d. NO. OF ANALYSES | a. CONCENTRATION | b. MASS | a. LONG TERM AVERAGE VALUE | | b. NO. OF ANALYSES |
| | | | | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | | | | (1) CONCENTRATION | (2) MASS | |
| GC/MS FRACTION – VOLATILE COMPOUNDS | | | | | | | | | | | | | | | |
| 1V. Accrolein (107-02-8) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2V. Acrylonitrile (107-13-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 3V. Benzene (71-43-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4V. Bis (*Chloromethyl*) Ether (542-88-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 5V. Bromoform (75-25-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 6V. Carbon Tetrachloride (56-23-5) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 7V. Chlorobenzene (108-90-7) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 8V. Chlorodibromomethane (124-48-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 9V. Chloroethane (75-00-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 10V. 2-Chloroethylvinyl Ether (110-75-8) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 11V. Chloroform (67-66-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 12V. Dichlorobromomethane (75-27-4) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 13V. Dichlorodifluoromethane (75-71-8) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 14V. 1,1-Dichloroethane (75-34-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 15V. 1,2-Dichloroethane (107-06-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16V. 1,1-Dichloroethylene (75-35-4) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 17V. 1,2-Dichloropropane (78-87-5) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 18V. 1,3-Dichloropropylene (542-75-6) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 19V. Ethylbenzene (100-41-4) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 20V. Methyl Bromide (74-83-9) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 21V. Methyl Chloride (74-87-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |



See Page V-9 for footnotes.

CONTINUED FROM PAGE V-4

| 1. POLLUTANT AND CAS NUMBER (*if available*) | 2. MARK "X" | | | 3. EFFLUENT | | | | | | | 4. UNITS | | 5. INTAKE (*optional*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | a. TESTING REQUIRED | b. BELIEVED PRESENT | c. BELIEVED ABSENT | a. MAXIMUM DAILY VALUE | | b. MAXIMUM 30 DAY VALUE (*if available*) | | c. LONG TERM AVRG. VALUE (*if available*) | | d. NO. OF ANALYSES | a. CONCEN-TRATION | b. MASS | a. LONG TERM AVERAGE VALUE | | b. NO. OF ANALYSES |
| | | | | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | | | | (1) CONCENTRATION | (2) MASS | |
| GC/MS FRACTION – VOLATILE COMPOUNDS (*continued*) | | | | | | | | | | | | | | | |
| 22V. Methylene Chloride (75-09-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 23V. 1,1,2,2-Tetrachloroethane (79-34-5) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 24V. Tetrachloro-ethylene (127-18-4) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 25V. Toluene (108-88-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 26V. 1,2-Trans-Dichloroethylene (156-60-5) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 27V. 1,1,1-Trichloro-ethane (71-55-6) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 28V. 1,1,2-Trichloro-ethane (79-00-5) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 29V Trichloro-ethylene (79-01-6) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 30V. Trichloro-fluoromethane (75-69-4) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 31V. Vinyl Chloride (75-01-4) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| GC/MS FRACTION – ACID COMPOUNDS | | | | | | | | | | | | | | | |
| 1A. 2-Chlorophenol (95-57-8) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2A. 2,4-Dichloro-phenol (120-83-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 3A. 2,4-Dimethyl-phenol (105-67-9) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4A. 4,6-Dinitro-O-Cresol (534-52-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 5A. 2,4-Dinitro-phenol (51-28-5) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 6A. 2-Nitrophenol (88-75-5) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 7A. 4-Nitrophenol (100-02-7) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 8A. P-Chloro-M-Cresol (59-50-7) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 9A. Pentachloro-phenol (87-86-5) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 10A. Phenol (108-95-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 11A. 2,4,6-Trichloro-phenol (88-05-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |



See Page V-9 for footnotes.

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

| 1. POLLUTANT AND CAS NUMBER (*if available*) | 2. MARK "X" | | | 3. EFFLUENT | | | | | | | 4. UNITS | | 5. INTAKE (*optional*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | a. TESTING REQUIRED | b. BELIEVED PRESENT | c. BELIEVED ABSENT | a. MAXIMUM DAILY VALUE | | b. MAXIMUM 30 DAY VALUE (*if available*) | | c. LONG TERM AVRG. VALUE (*if available*) | | d. NO. OF ANALYSES | a. CONCENTRATION | b. MASS | a. LONG TERM AVERAGE VALUE | | b. NO. OF ANALYSES |
| | | | | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | | | | (1) CONCENTRATION | (2) MASS | |
| GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS | | | | | | | | | | | | | | | |
| 1B. Acenaphthene (83-32-9) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2B. Acenaphtylene (208-96-8) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 3B. Anthracene (120-12-7) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4B. Benzidine (92-87-5) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 5B. Benzo (*a*) Anthracene (56-55-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 6B. Benzo (*a*) Pyrene (50-32-8) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 7B. 3,4-Benzo-fluoranthene (205-99-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 8B. Benzo (*ghi*) Perylene (191-24-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 9B. Benzo (*k*) Fluoranthene (207-08-9) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 10B. Bis (*2-Chloro-ethoxy*) Methane (111-91-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 11B. Bis (*2-Chloro-ethyl*) Ether (111-44-4) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 12B. Bis (*2-Chloroisopropyl*) Ether (102-80-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 13B. Bis (*2-Ethyl-hexyl*) Phthalate (117-81-7) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 14B. 4-Bromophenyl Phenyl Ether (101-55-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 15B. Butyl Benzyl Phthalate (85-68-7) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16B. 2-Chloro-naphthalene (91-58-7) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 18B. Chrysene (218-01-9) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 19B. Dibenzo (*a,h*) Anthracene (53-70-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 20B. 1,2-Dichloro-benzene (95-50-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 21B. 1,3-Di-chloro-benzene (541-73-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |



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See Page V-9 for footnotes.

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| 1. POLLUTANT AND CAS NUMBER (*if available*) | 2. MARK "X" | | | 3. EFFLUENT | | | | | | | 4. UNITS | | 5. INTAKE (*optional*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | a. TESTING REQUIRED | b. BELIEVED PRESENT | c. BELIEVED ABSENT | a. MAXIMUM DAILY VALUE | | b. MAXIMUM 30 DAY VALUE (*if available*) | | c. LONG TERM AVRG. VALUE (*if available*) | | d. NO. OF ANALYSES | a. CONCEN-TRATION | b. MASS | a. LONG TERM AVERAGE VALUE | | b. NO. OF ANALYSES |
| | | | | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | | | | (1) CONCENTRATION | (2) MASS | |
| GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (*continued*) | | | | | | | | | | | | | | | |
| 22B. 1,4-Dichloro-benzene (106-46-7) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 23B. 3,3-Dichloro-benzidine (91-94-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 24B. Diethyl Phthalate (84-66-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 25B. Dimethyl Phthalate (131 -11-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 26B. Di-N-Butyl Phthalate (84-74-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 27B. 2,4-Dinitro-toluene (121-14-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 28B. 2,6-Dinitro-toluene (606-20-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 29B. Di-N-Octyl Phthalate (117-84-0) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 30B. 1,2-Diphenyl-hydrazine (*as Azo-benzene*) (122-66-7) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 31B. Fluoranthene (206-44-0) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 32B. Fluorene (86-73-7) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 33B. Hexachloro-benzene (118-74-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 34B. Hexachloro-butadiene (87-68-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 35B. Hexachloro-cyclopentadiene (77-47-4) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 36B Hexachloro-ethane (67-72-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 37B. Indeno (*1,2,3-cd*) Pyrene (193-39-5) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 38B. Isophorone (78-59-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 39B. Naphthalene (91-20-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 40B. Nitrobenzene (98-95-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 41B. N-Nitro-sodimethylamine (62-75-9) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 42B. N-Nitrosodi-N-Propylamine (621-64-7) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |



See Page V-9 for footnotes.

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| 1. POLLUTANT AND CAS NUMBER (*if available*) | 2. MARK "X" | | | 3. EFFLUENT | | | | | | | 4. UNITS | | 5. INTAKE (*optional*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | a. TESTING REQUIRED | b. BELIEVED PRESENT | c. BELIEVED ABSENT | a. MAXIMUM DAILY VALUE | | b. MAXIMUM 30 DAY VALUE (*if available*) | | c. LONG TERM AVRG. VALUE (*if available*) | | d. NO. OF ANALYSES | a. CONCEN-TRATION | b. MASS | a. LONG TERM AVERAGE VALUE | | b. NO. OF ANALYSES |
| | | | | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | | | | (1) CONCENTRATION | (2) MASS | |
| GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (*continued*) | | | | | | | | | | | | | | | |
| 43B. N-Nitro-sodiphenylamine (86-30-6) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 44B. Phenanthrene (85-01-8) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 45B. Pyrene (129-00-0) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 46B. 1,2,4-Tri-chlorobenzene (120-82-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| GC/MS FRACTION – PESTICIDES | | | | | | | | | | | | | | | |
| 1P. Aldrin (309-00-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2P. α-BHC (319-84-6) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 3P. β-BHC (319-85-7) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4P. γ-BHC (58-89-9) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 5P. δ-BHC (319-86-8) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 6P. Chlordane (57-74-9) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 7P. 4,4'-DDT (50-29-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 8P. 4,4'-DDE (72-55-9) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 9P. 4,4'-DDD (72-54-8) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 10P. Dieldrin (60-57-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 11P. α-Enosulfan (115-29-7) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 12P. β-Endosulfan (115-29-7) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 13P. Endosulfan Sulfate (1031-07-8) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 14P. Endrin (72-20-8) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 15P. Endrin Aldehyde (7421-93-4) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 16P. Heptachlor (76-44-8) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |



See Page V-9 for footnotes.



CONTINUE ON PAGE V-9

| EPA I.D. NUMBER (*copy from Item 1 of Form 1*) | OUTFALL NUMBER |
|---|---|
| WA980978753 | 004/005 |

CONTINUED FROM PAGE V-8

| 1. POLLUTANT AND CAS NUMBER (*if available*) | 2. MARK "X" | | | 3. EFFLUENT | | | | | | | 4. UNITS | | 5. INTAKE (*optional*) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | a. TESTING REQUIRED | b. BELIEVED PRESENT | c. BELIEVED ABSENT | a. MAXIMUM DAILY VALUE | | b. MAXIMUM 30 DAY VALUE (*if available*) | | c. LONG TERM AVRG. VALUE (*if available*) | | d. NO. OF ANALYSES | a. CONCEN-TRATION | b. MASS | a. LONG TERM AVERAGE VALUE | | b. NO. OF ANALYSES |
| | | | | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | (1) CONCENTRATION | (2) MASS | | | | (1) CONCENTRATION | (2) MASS | |
| GC/MS FRACTION – PESTICIDES (*continued*) | | | | | | | | | | | | | | | |
| 17P. Heptachlor Epoxide (1024-57-3) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 18P. PCB-1242 (53469-21-9) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 19P. PCB-1254 (11097-69-1) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 20P. PCB-1221 (11104-28-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 21P. PCB-1232 (11141-16-5) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 22P. PCB-1248 (12672-29-6) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 23P. PCB-1260 (11096-82-5) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 24P. PCB-1016 (12674-11-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 25P. Toxaphene (8001-35-2) | | | X | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |



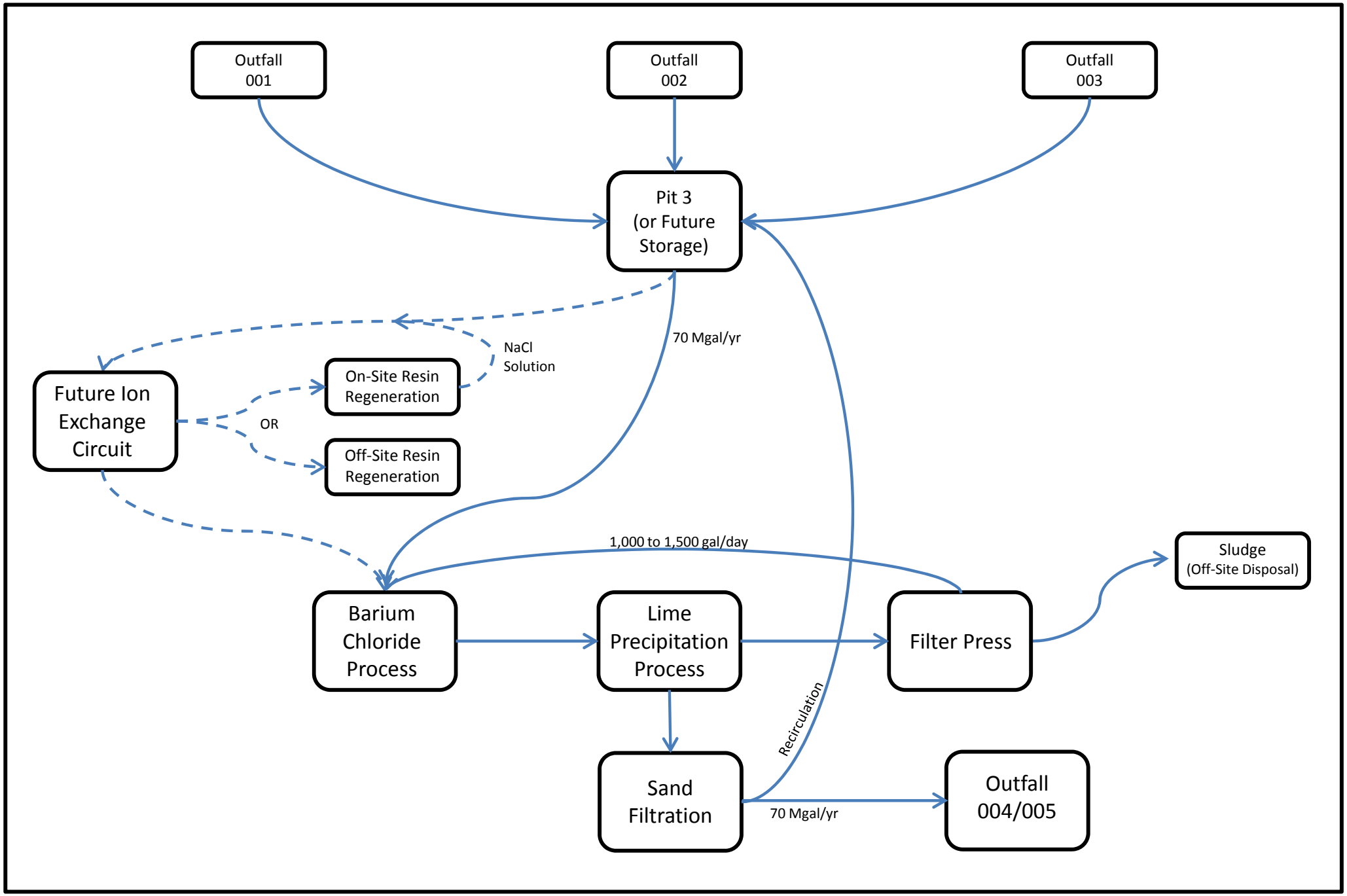
Arithmetic Mean used for all Long Term Values unless otherwise noted.

a - Median used due to non-parametric distribution.

b - Geometric mean used for log normal distribution.

c - No Long Term Value used because below detection limit.

d - Total Ra cannot be determined due to the number of non-detects for Ra226 and Ra228, refer to attached raw data.




| | | |
|---|---|---|
| WORTHINGTON MILLER ENVIRONMENTAL, LLC | FIGURE 3<br>CONCEPTUAL EXISTING AND FUTURE PROCESS FLOW DIAGRAM | DATE: MARCH 2013<br>PROJECT: MIDNITE<br>FILE: FIGURE 3 |